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COMMERCIAL FISHERIES REVIEW

A REVIEW OF DEVELOPMENTS AND NEWS OF THE FISHERY INDUSTRIES
PREPARED IN THE DIVISION OF COMMERCIAL FISHERIES

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December 1947 Washington 25, D.C. Vol. 9, No. 12

THE CHESAPEAKE BAY CRAB INDUSTRY

By James Wharton*

INTRODUCTION

The crab industry of the Chesapeake Bay area, though one of the youngest seafood industries on the Atlantic Coast, ranks high in importance. Its growth seems striking when one remembers that its beginning can scarcely be placed earlier than 1875. About that time, certain merchant pioneers saw wider market possibilities for the Chesapeake Bay blue crab, Callinectes sapidus. They began to offer crab meat ready-picked from the steamed hard crab, as well as soft crabs[1/] shipped to reach the consumer alive.

UNLOADING HARD CRABS AT HAMPTON FROM A MOTORBOAT EQUIPPED WITH A PATENT DIP TROTLINE

It is difficult to believe that the traffic in soft crabs, in particular, is so recent. While soft crabs are today one of the most sought after and highest priced seafood delicacies in America, evidence shows that less than a century ago they were not nearly so popular. In Europe today, even, they are almost unknown. An American cookbook of 1887 refers to them as "often quite cheap" and prescribes the best known way at that time of keeping them alive till eaten--wash in cold water every day, also wash the eel grass they are packed in. Refrigeration is not mentioned! Some years ago, when the Williamsburg Restoration made an intensive search for Colonial Virginia recipes, a great number were found for many varieties of foods, including crab meat. But there was none for soft crabs.

Nutritionists recommend the blue crab because of its high mineral value. Its iodine content is among the highest of any food; also present are potassium, calcium, iron, copper, and phosphorus. Thiamine, riboflavin, and ascorbic acid are found. The ash is of high alkalinity.

Statistics showing the condition of the Chesapeake Bay crab industry in its infancy are not sufficiently complete to provide a thoroughgoing comparison with today. In 1886, however, the drain on crab resources was already beginning to be felt. In a statement dated that year, the Commissioner of Fisheries for Virginia, referring to the industry as "but a few years old," recommended a partial curb on crabbing by the prohibition of dredging. Crabs were declared to be economically more important than oysters in the Tangier-Crisfield area. Enterprising shippers about this time began to send fresh cooked crab meat west of the Mississippi. Crabbers were steadily increasing in numbers.

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1/ A soft crab is a crab which has shed its shell in order to grow and whose new shell has not yet hardened.

In view of the fact that good refrigeration, a necessity in the handling of cooked crab meat, was not to be counted on in the early days, it is not surprising to learn that crab meat was canned then to a larger extent than today. At the present time, canned Chesapeake Bay crab meat has almost disappeared from the market, but the fresh meat, packed in 1-pound cans and efficiently refrigerated is available throughout the country.

It may safely be said that with an industry attempting to build on the blue crab resource, severe fluctuations in supply were, and are, detrimental to a stable industry. The number of crabs in the Bay tends, for reasons not always clear, to be much less numerous some years than others. Conferences in which control measures have been discussed by fishery officials of the two States sharing the resource, Maryland and Virginia, have been held ever more frequently as the industry developed. It is indeed a nice question to determine how to have just the right amount of crabs present in the Bay each season. For, if too many crabs are caught (as when they are abnormally abundant), the price drops to the point where the crabber has little incentive and turns to another means of making a living. If, on the other hand, too few are caught (because of scarcity), the industry suffers by losing its market outlets.

In the production of fresh cooked crab meat, however, there is one factor contributing to stabilization--the crab picker. Crab picking is a semi-skilled occupation, the supply of pickers is relatively limited and those available desire year-round employment. During years of war and the meat shortage, crab meat producers might have sold more of their product if more crab pickers had been available. In several instances, we had the anomaly of crabs plentiful and cheap, and crab meat scarce and high. Shortage of pickers was the major factor in this condition. In this regard, it is noteworthy that the crab meat industry has never become mechanized, and real mass production is unknown. The devices introduced from time to time for handling crabs by machinery have not proved themselves practical. The latest step in this direction is a machine to remove meat from the crab claw. This has not yet met with general adoption. However, time studies have been made which indicate that it is possible materially to increase the output of crab pickers by the adoption of time-saving methods of extracting the meat.

With a well defined limit to production of the meat itself and with the ever present necessity of handling crabs as soon as they are landed, a limit frequently is placed upon catches in years of plenty. Crab dredge vessels, for instance, are instructed not to bring in more than a certain amount of crabs to the dock on pain of losing the surplus. Consequently, at such times the production of fresh crab meat ceases to be an accurate index of the supply of crabs.

The importance of some biological control of the Chesapeake Bay blue crab has been stressed by those most concerned. Control is said by some to hinge upon protection of the mother crabs about to spawn, called "sponge crabs." If these are taken without restriction, the argument goes, a decrease in crabs follows. But it has also been shown that weather plays a most important part in survival. The consensus is that more study is needed, and the fisheries laboratories of Maryland and Virginia have allowed an important place for such study in their programs. The publications of these agencies yield some of the most valuable information available on the Chesapeake Bay blue crab.

A hint of what the crab industry means to Chesapeake Bay economically may be briefly set forth.

In 1947, in Virginia, 109 crab businesses operated, ranging from one-man firms shipping perhaps 500 dozen soft crabs, or 50 barrels of hard crabs per season,

up to picking houses working the year-round and producing 100,000 pounds of crab meat annually, at an average of $1.00 per pound. Similarly, in Maryland, there were 134 such businesses. During warm weather, the soft crab industry enters the picture. Its season is limited to about four months. Contemporary statistics show the soft crab catch of Chesapeake Bay to be five times that of the entire coast from North Carolina to Texas. The hard crab production of the latter area does not substantially surpass that of the Chesapeake. Year-round employment is offered to an estimated 1,000 people, and seasonal to 3,500 more.

CAPTURE

A number of methods of taking crabs, more methods perhaps than for any other one creature of the sea, are in use in Chesapeake Bay. Two of them have been patented. Such methods range from dredging, which usually requires a boat of 5 net tons or more, carrying heavy dredges and a crew of four or five men, down to a lone youngster without a boat, wading over the river flats with a home-made push net. There are incidental catches also, as when soft crabs are caught in shad gill nets, and hard crabs in pound nets, haul seines, eel pots, catfish pots, oyster tongs and by hand lines. For that matter, every fishing gear known in the Bay has brought in crabs at one time or another.

Described below are the best known and most used ways of capturing crabs. Some, like the dredge and crab pot, are limited in their activity by law; others only by the nature of the crab itself. "Average catch" means the catch reasonably possible in an average year.

The Dip Net

The dip net is a ring or "bow" of ¼-inch iron, 1 foot in diameter, to which a net, usually hand-woven of cotton twine, is attached. It is set on a pole handle about 8 feet long and is used by the crabber as he stands on the bow of his skiff. Sometimes his skiff is "sharp ended." That is, each end is bow-shaped for quick maneuvering. Such skiffs are specially designed for soft crabbing. In shallow water, the fisherman poles the skiff with the handle end of the net until he spies a soft crab or peeler,2/ which is usually resting on the bottom, almost indistinguishable to the inexperienced eye. With a swift motion, he scoops the crab up and, if it is a peeler, "nicks" its claws and drops it in a specially constructed "well" in the center of the skiff. Nicking the claws is important because it prevents the crabs from preying upon and destroying each other. It should be done with skill to avoid the wounding which might possibly cause death from bleeding. The correct method is to force out the movable prong of the claw carefully until it snaps at the hinge. The purpose of the "well," which is nothing but a live-car built into the skiff, with holes in the bottom for the free passage of water, is to insure the good condition of the crabs until they are delivered to the shedding house. The well is divided--one side for peelers, one for soft crabs.

Many dip netters carry a bottle of linseed or menhaden oil. When the water is ruffled by the wind so that visibility at the bottom is difficult, a few drops of oil will clear up the immediate area around the skiff.

The number of crabs caught by the dip net varies greatly. Weather conditions must be just right for maximum catches. The average may be placed at 5 dozen per day. Dip net crabbing is at its best in the calm of early morning, especially

2/ A peeler is a crab which is about to shed its shell.

if the weather is clear and the tide low. Many crabbers arrive at the grounds before sunup; by noon, their workday is usually over.

The Push Net

WADING FOR SOFT CRABS. THE NETS ARE SPECIALLY ADAPTED FOR PUSHING OVER THE BOTTOM.

The push net is used while wading and serves to capture soft crabs hidden in the eel grass that often grows thickly on crabbing grounds. It resembles a dip net except that the iron bow is about twice as large and flattened where it is designed to come into contact with the bottom. As it is pushed, it becomes filled with everything in its path. As the crabber empties it, he removes any soft crabs or peelers and places them in his skiff or in the live-box floating in the water behind him, towed by a line fastened round his waist. Average catch is about the same as for the dip net with perhaps a shade of advantage to the dip net.

The Crab Scrape

The crab scrape is an efficient instrument for gathering soft and peeler crabs in water deeper than that worked by dip netters. Its use is necessarily confined to bottoms where leased oyster ground is not extensive. This limits it almost entirely to the eastern shore.

Fashioned like an oyster dredge, that is to say, a metal frame with a mesh bag attached, its drag bar, about 42 inches wide, is without teeth in order to prevent injury to the crabs it strikes and to keep it from digging too deeply into the bottom. Attached by ropes, it is pulled by a small powerboat. However, under some conditions, a sail is used. Sometimes two scrapes are operated per boat, and large vessels may operate three or four. One man can raise, dump, and cull the first scrape load, which together with crabs, contains grass, mud, and shells, while the second scrape is being dragged along by the boat at low speed. Scrapes have to be operated usually at high tide in order to accommodate the draft of the boat. Catches average 400 peelers per day per scrape.

The Crab Fyke

The crab fyke is an ingeniously simple and often productive device permitted by Virginia but not by Maryland. Essentially, it is a pound net designed for peeler crabs and constructed of galvanized poultry wire netting.

A wire fence or leader, 2 feet high, is staked out on flats frequented by peelers, running from high water mark out 50 or 60 feet to a preliminary inclosure which is followed by a funnel leading into a wire box or trap from 3 to 6 feet square. The box is not baited, but during favorable periods, several hundred peelers may be entrapped in one day. Some mortality occurs when "green" (as distinguished from "ripe") peelers or mature hard crabs attack the crabs in the process of shedding.

Because of certain specialized conditions surrounding their successful operation, such as shore-line contour and quality of bottom, crab fykes are not numerous in the Bay; only 700 were licensed in 1947. The average daily catch is 4 dozen crabs.

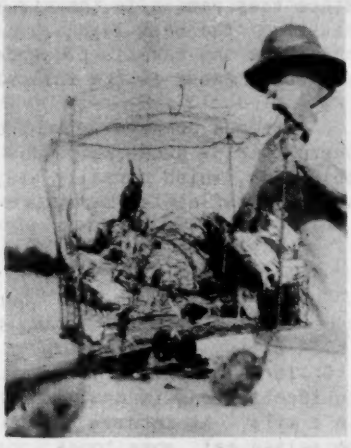
The Crab Haul Seine

Compared to other crabbing gear, crab haul seines have little popularity in the Bay. They may, however, be used to advantage--with or without a skiff or other boat--on shores where crab scrapes are impractical.

The net is like a miniature fish seine and is operated by two men wading. Its length averages 40 feet; its width, 3 feet; its mesh, about ½ inch. Weighted by chain at the bottom it has corks at the top and a pole at each end. It is dragged over the flats by hand and at intervals it is raised and the crabs removed and placed in a float, or the catch brought up to the shore. A yield of 100 crabs per day, principally peelers, is average for this gear.

The Crab Pot

The crab pot, invented and patented by B. F. Lewis of Harryhogan, Virginia, in 1938, is a box 2 feet square constructed of wire mesh on a rigid metal frame, divided into a lower or bait chamber which contains a cylindrical bait cup in its center, and an upper or trap chamber. The crab, attracted by the bait, enters, and in swimming upward after grasping at the bait, goes through the opening into the trap chamber and is imprisoned.



TAKING UP A CRAB POT. RAPPAHANNOCK RIVER

General practice is to set the pot in water of about 4 fathoms with a buoy attached. In Maryland, each licensee is limited to 35 pots, in Virginia, to 50. Extensive restrictions have been placed upon pots by State laws to keep them from being destructive of small crabs and other marine life and to keep them away from navigation channels. One and one-half inch mesh is prescribed to allow undersized crabs to escape.

One man can fish a series of pots from one small boat. Average yield is between 2 and 5 barrels per day, with peelers ranging around 1 percent. Bait most frequently used is salted fish heads or menhaden. At times of bait shortage, crab potters have been known to discontinue crabbing altogether.

The fragility of the pot makes it liable to destruction in storms and very susceptible to corrosion from salt water. It is necessary to have new pots each season, except in those cases where they are tarred periodically; often replacements are required during the same season. They are usually constructed by the crabber himself and the cost is small--under $3.00 apiece. An estimated 60,000 were operated in 1947 in the Bay and its tributaries.

The Crab Dredge

If it were not for the crab dredge, fresh crab meat from Chesapeake Bay would not be available in the winter months. Cold weather sends crabs to deep water where they cease migration, and bury in the mud. The dredge is designed to capture such crabs.

A crab dredging vessel is usually among the larger class of bay fishing boats, say 5 net tons or more, and carries a crew of four or five men. It is usually diesel-

propelled and its two crab dredges are hauled by the same power. The dredge itself is a strongly reinforced triangular iron frame, with a meshed bag consisting of steel rings below and cotton twine above attached to a drag bar about 2 yards wide. Iron teeth 4 inches long are spaced along the under side of the drag bar. These teeth cause the dredge to dig into the bottom and collect most of the buried crabs in its path. Both dredges are operated at the same time, one on each side of the vessel. They are drawn by heavy chains which pass over rollers at the vessel's rail, thence to pulleys attached to a post at mid-deck, then below to the motorized windlass, which is controlled from the pilot-house. However, each dredge can be operated separately--while one is hauled aboard, the other continues dragging. Two or three men empty the dredge on deck and separate the marketable crabs from the debris, which is shoveled overboard.

In Maryland, winter crab dredging is prohibited except in two counties. In Virginia, it is limited as to area and season. Biological studies have indicated that hibernating female crabs choose waters of relatively high salinity, while males prefer it lower. Thus, males, to a great extent, escape dredge capture, since they remain in the rivers and in the upper Bay, where crab dredging is prohibited. The best legal grounds for crab dredging are in the saltier lower Bay and there the take is preponderantly females, most of which have been fertilized and would spawn in the following warm season.

Dredged crabs are sold by the barrel which contains about 100 pounds. A barrel yields about 12 pounds of meat. During a period of crab scarcity in 1947, the price, which normally stays around $5.00 per barrel, reached a record of $21 at the Crisfield docks. An average daily catch is 12 barrels (per boat or dredge).

The Trotline

The trotline is used when the water becomes warm enough for the crab to resume his activity in hunting food.

It is usually a line of 3/8-inch cotton twine varying in length according to locality and to what might be called the "crab biting rate," from 100 yards to 1 mile. At intervals of from 9 inches to 5 feet, chunks of bait which may be salted eel, some tough unmarketable fish like hogchoker, or meat, prices permitting, tripe or other meat scraps, are fastened by loops or occasionally, with short snoods. After the line is baited, it is anchored to the bottom and marked with a buoy. As it is fished (usually by one man in a small powerboat which is kept moving at low speed), it is pulled over a roller projecting about a foot beyond the gunwale. Crabs, once having taken the bait, usually hang on until near the roller. Then, they are scooped off and placed in barrels. Peelers make up from 1 to 5 percent of trotline catches; sometimes doublers (a mating pair) are caught. This happens when the male clutches the bait and brings his mate up the line with him. Mating females are in either the peeler or soft stage. The trotline is fished from end to end several times a day if the biting activity of the crabs warrants it. Other adjustments are made by the crabber according to conditions. The spacing of baits may be changed proportionately to the rate at which crabs bite; similarly, changes are made in the length of line. The average daily catch is 2 to 4 barrels. Higher catches are made with a trotline fished with a "patent dip." This rig is similar to the one just described, except that it permits faster movement of the boat, and lessens the labor of the crabber, since the crabs are removed from the baits automatically as they pass through a specially constructed net fastened by a brace to the boat's side. Patent dip trotlines are used principally in the deeper waters of the lower Bay from James River to Cape Charles. They average from 4 to 10 barrels a day with highest catches usually in November.

Trotlines are rebaited after each day's use, coiled in a barrel and well sprinkled with salt to be ready for setting early next morning. Crabs, it is widely believed, bite best in the early hours of the morning.

In order to comply with the legal minimum limits on hard crabs (5 inches), peelers (3 inches), soft crabs (3½ inches), most crabbers carry a small notched stick as a gauge. Occasionally, crabs as wide as 8 inches are caught.

MARKETING

Methods of marketing crabs differ, according to the kind of crab. Hard crabs are handled in a way that would be unsuitable if applied to soft crabs and peelers. Described below are the customary procedures.

The Buy Boat

Crabbing is practiced in many far-flung, relatively inaccessible sections of the Bay, which lack a central loading point. The "buy boat" and "run boat" solve the problem of transportation of hard crabs by visiting the crabbers individually on the crabbing grounds and buying their catch. They then transport their loads to the crab picking house. Although the terms "buy boat" and "run boat" tend to be used interchangeably, the strict meaning of the first is that the boat captain buys the crabs himself to sell where he wishes; of the second, the captain freights crabs and acts as buying agent for a dealer.

Crab industry centers, like Hampton and Crisfield, send out scores of such vessels to all parts of the Bay. When feasible, loads of crabs are transported by truck. Most crabs produced in the Maryland-Virginia Atlantic Coast area beyond the range of Bay vessels, are so handled.

Crab-transporting vessels are from 40 to 60 feet long with a capacity up to 100 barrels. When, as sometimes happens, the captains bid against each other in order to acquire a full load, the crabbers benefit from prices higher than they had anticipated. Buy boats may carry stores of bait to be sold to the crabber.

The Shedding House

The place where soft crabs are prepared for market is called the shedding house. It is always on the water front in a soft crabbing area and has a landing convenient for the small boats in which crabbers transport their catches. Moored nearby are the shedding floats or live-cars in which peelers are retained until they shed their hard shell. Floats are home-made, with a rough plank bottom and laths on the sides. They are about 12 feet long and 4 feet wide, and of a depth of perhaps 18 inches or enough to prevent the escape of the crabs. A wooden flange along the outer sides regulates the depth of submergence, usually 9 inches. A shedding house uses from 4 to 50 such floats, depending upon its volume. Often they are kept in a fenced-in inclosure to protect them from rough water. Floats are taken from the water and allowed to dry every week or so during the season. This keeps them free from parasites such as moss, shipworms, and barnacles, and prevents their becoming waterlogged. At some houses, peelers are divided into five classes (named in order of shedding time required): busters (partly emerging from the shell), and, so-called from the changing appearance of the flipper, "red sign," "pink rim," "white rim," and "green." These are placed in floats appropriate to their stage of moulting. Floats must be carefully watched by an experienced attendant, and the crabs removed for shipment at the proper

moment. This means that, among any sizable group of floats, a constant going over is necessary both night and day.

A crab which has just moulted--jelly-soft and delicate--cannot survive shipment. Since soft crabs reaching the consignee dead are discarded and hence are a total loss to the shipper, it is customary to allow the newly-shed ones to remain in the float an hour or two after they emerge from the shell. They thus develop a body firmness and a certain toughness of skin that insure their shipping well and in no way affect their standing as a genuine soft crab. There is danger in leaving soft crabs too long in the water because they quickly harden beyond the desired stage and become "paper shell" or "buckram" crabs, unacceptable in the soft crab market and too watery and thin to pass as a hard crab. When soft crabs are removed from the water, the hardening process is suspended indefinitely. Four size grades are in use: mediums (3⅛ inches spike to spike, the legal minimum), hotel primes, primes, and jumbos. In some houses, the hotel prime classification is not used.

Soft crabs are packed snugly one against the other, with legs folded and mouths elevated, in shallow wooden trays which hold from 3 to 8 dozen (according to size of crab and size of tray) covered with parchment paper, seaweed, and cracked ice, and the trays boxed. Shipped thus, they travel long distances and remain alive for days. Good refrigeration in transit is important. Occasional mortality occurs if the weather is extremely hot.

Shedding houses are classed as small businesses. They seldom employ more than 2 or 3 men. They operate from May to September and the volume of the largest of them would scarcely exceed 250,000 peelers in that period. The number of peelers bought from the crabber is not indicative of the number of soft crabs shipped to market because there is the seemingly inevitable mortality of peelers in the shedding floats which hasfor various reasons at times reached the startling figure of 60 percent.

A profitable side line for some shedding houses is the sale of live peelers to sports fishermen for bait. The price charged for them is often the same as for edible soft crabs.

A remarkable feature of the shedding house is its absolute independence, if the waterproof paper and the ice be excepted, of any manufactured equipment whatsoever. The shipping trays and boxes are made on the spot during spare time out of thin scrap lumber. The insulating grass or sea oar, so necessary for safe shipment, is gathered locally along the shores. The floats and dip nets are homemade. Little else is needed.

The Crab Picking House

Almost the entire catch of hard crabs goes to the picking house to be turned into crab meat. The exception is the large sized or "Jimmie" crab, which is in demand at bars, and for picnics and steamed crab feasts. It represents a negligible fraction of the whole.

When crabs arrive at the picking house, which usually has a dockside for unloading, they are still alive. They are promptly placed in an iron basket and lowered into a large pressure cooker. After approximately 20 minutes of steaming they are withdrawn and carried to the picking room where pickers, working at long metal covered tables, await their arrival. The picker extracts the meat from the shell with a small sharp knife. Some crab houses use a specially designed

knife with the end bent into a sharp hook. The picker tries to preserve the original flaky condition of the meat as far as possible, because the best unbroken flakes, known in the trade as "lump" or "backfin," bring premium prices. Meat that is broken up or not entirely freed of bits of shell is graded lower. The third grade, and lowest priced, is the meat from the claw, so classed because it lacks whiteness and flakiness. All meat is graded by the picker, as she extracts it, by placing it in the 1-pound metal cans lying on the table before her. The cans are perforated at the bottom to keep moisture in the meat regulated, and these are the same cans in which the meat is iced and sold.

Washing crab meat in cold water gives it an additional whiteness, but the practice is not favored in the Bay area because it is believed to impair the flavor. Crab picking is supervised by Federal and State health services. Picking rooms are closely screened; in addition, the almost complete elimination of flies by DDT is now being effected. All implements are sterilized daily and the utmost precautions are taken to insure adequate and constant icing of the product. At Crisfield, a testing laboratory is maintained by a group of picking houses, and samples of meat are collected at frequent intervals for examination and approval.

CANNING AND BYPRODUCTS

Little crab meat has been canned in Maryland or Virginia in recent years, although there is considerable canning of this product in the New England, South Atlantic and Gulf States, Pacific Coast States, and Alaska.

Soft crabs have been canned successfully, but as a rule, canning is attempted only during years of glut when the price falls to levels which permit the pack to be offered at a moderate price. A growing volume in packaged frozen soft crabs has lately been noted.

The shell refuse of the picking house can be turned into meal which is in demand as an ingredient of farm animal feed. The manufacturing process is simple. The material is dried in a heated rotating drum until it is rid of its water content, which is about 85 percent. It is then ground. One or more such dehydrating plants are usually located conveniently near crab picking centers.

EDIBLE CRABS

The marine waters of the United States yield three species of crabs possessing all the qualifications of an important food resource--abundance, wholesomeness, and good flavor. These crabs are the blue crab of the middle and southern Atlantic Coast and the Gulf of Mexico, the rock crab of New England, and the Dungeness crab of the Pacific Coast. There are also several other species of good quality and sufficient abundance to support small fisheries. Among them are the Jonah crab of New England, the stone crab of the south Atlantic Coast, and the king crab of the Alaskan coast.

--Fishery Leaflet 71

SUGGESTIONS FOR HANDLING TRAWLER-CAUGHT FISH

By J. F. Puncochar* and S. R. Pottinger**

INTRODUCTION

Methods of handling fish aboard the vessels engaged in the Atlantic offshore fisheries have changed very little in recent years. During this time, however, constant improvement has been made in vessel construction and equipment. Diesel power has almost entirely replaced steam for the operation of the larger vessels. In addition, some of the vessels are equipped with mechanical refrigeration in the hold. Mechanical refrigeration, supplemented with ice, helps to maintain a proper storage temperature during the comparatively long fishing trips. The crews are being provided with better living quarters on the newer vessels. Automatic indicators record the depth of water continuously, thus shortening the time required in locating the most desirable fishing grounds. On some vessels, ship-to-shore radio communication is maintained so that fish can be landed as desired to maintain an even flow of production. Although many improvements have been made on the vessels and fishing gear, changes in the methods of handling the fish aboard the vessels and ashore have received only limited attention.

By far the greater part of ground species landed at New England ports is brought in by otter trawlers. During the latter part of 1947, a total of 385 trawlers of all sizes were operating in the principal ports of the area. Of this number, 68 were large (151 gross tons or over), 111 medium (51-150 gross tons), and 206 were small (5 net tons to 50 gross tons). Large trawlers average 2.6 trips monthly and are absent 7.5 days. Medium and small trawlers average 2.7 and 5.6 trips monthly and are absent 6 and 1.3 days, respectively. Landings of fish and shellfish for August 1947 totaled 59,166,394 pounds at the principal Massachusetts ports. Of this amount, the trawling fleet landed 45,949,000 pounds.

A number of trips were made aboard trawling vessels during the past several years by personnel of the Division of Commercial Fisheries for the purpose of collecting data and observing methods of handling fish. In addition, information relative to methods followed on individual boats was obtained through interviews with captains, owners, and crews. The findings, as well as recommendations for improving handling methods, are discussed in this report.

HANDLING FISH ABOARD VESSELS

In otter trawl fishing (Figure 1, see p. 11) otter nets or "trawls" are dragged along the ocean bottom by the vessel at a speed of approximately three knots, for a period varying from an hour to an hour and a half. The net is then brought aboard and the closed or "cod" end of the net containing the fish is suspended a short distance above the deck. The closed end of the net, which is pursed with a heavy rope, is then released. The fish fall on deck into "pens" or "checkers" (Figure 2, see p. 12) which are made of sturdy, removable boards called "checker boards." After discharging, the net is examined for tears and, if in good condition, it is immediately placed back into the water to repeat the dragging operation. If badly torn, an alternate net on the opposite side of the vessel is used.

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Illustrations by Boris O. Knake, Fishery Engineer, Fishery Technological Laboratory, Boston, Mass.

Repairs to badly torn nets are made when time permits. Fishing is often conducted throughout the 24 hours of a day, the crew being divided into two groups which alternate in shifts, usually of six hours' duration.

Immediately after the net has been returned to the water and trawling has been resumed, the fishermen begin to prepare the fish for storage. Fish, as they are brought aboard, are in excellent condition with the exception of a few that may be torn or bruised when the net is hauled in. Before storage in the hold, most of the varieties are eviscerated, although the smaller species such as flounders, butterfish, and rosefish, which are often found in the net, are generally stored in the round. Evisceration or "drawing" is generally accomplished in two major operations. Standing in the mass of fish, one group of fishermen slit the stomach wall after which the fish are tossed to other "checkers" and evisceration is completed by another group. After separation, the fish are transferred from the "checkers" to the wash-box by means of forks. Continuously circulating sea water is utilized in washing the drawn fish. During washing, the fish are agitated with a three-tined fork. After washing, they are forked from the wash-box into an open hatch, dropping to the floor of the hold. On the small trawlers, the drawn fish are usually washed in the "checkers" with water from a hose and wire baskets are used for lowering the catch into the hold.

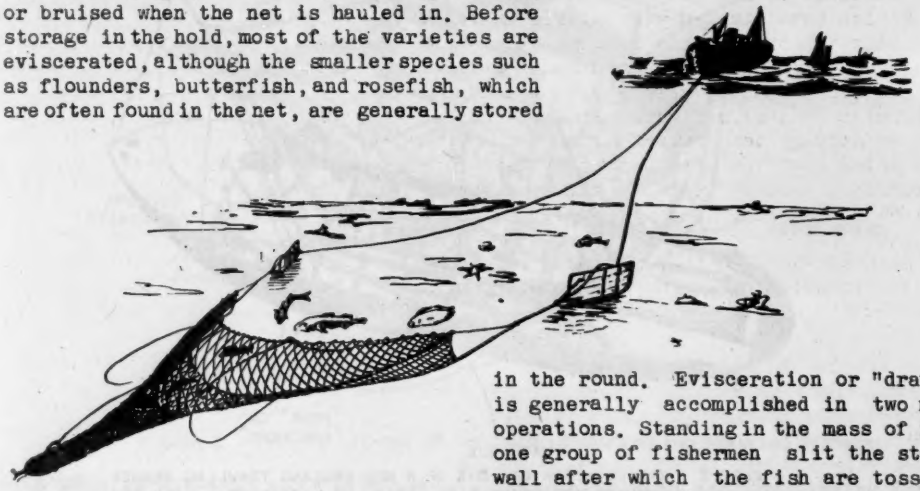

FIGURE 1 - OTTER TRAWL FISHING.

After the drawn fish are put into the hold, most of the viscera and remaining "trash," or commercially unimportant fish, are shoveled overboard and the deck is washed down. No effort is made to separate and save the livers and other waste at present.

Fish are stored in pens in the hold in alternate layers of ice as described by Knake (1946). Three-tined forks are used on the larger vessels for lifting the fish from the floor to the pens. Ice, which is crushed before being put aboard the vessels, is stored in alternate bins of the hold so that it is readily available to all storage compartments. The crushed ice varies in size from fine particles up to pieces as large as the fist.

The quantity of ice used for storing fish varies widely. Small trawlers carry up to 5 tons, medium ones about 15 tons, while approximately 30 tons are carried by the large vessels. The proportion of ice to fish is in the order of one to two or three by weight. More ice is required in warm weather than in cold weather. Pens that are situated near the engine room bulkhead are subjected to

somewhat higher temperatures and, consequently, must be provided with a greater quantity of ice than those in other sections of the hold. Vessels having mechanical refrigeration do not require as much ice as those depending on ice alone because the added refrigeration prevents the ice from melting rapidly.

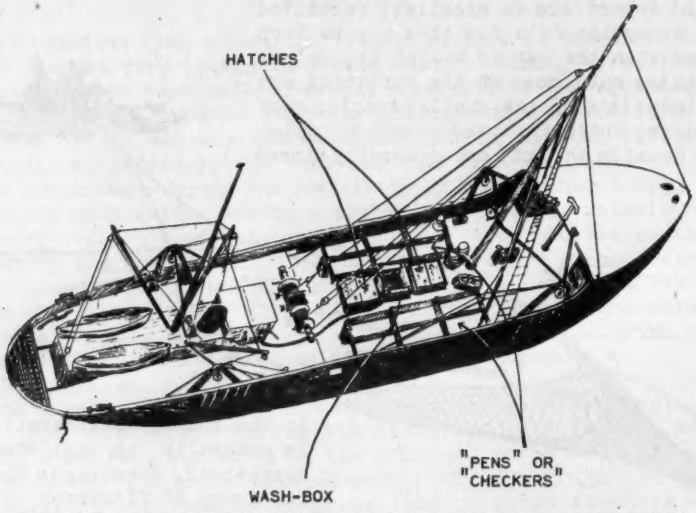

FIGURE 2 - TYPICAL DECK LAY-OUT OF A NEW ENGLAND TRAWLING VESSEL SHOWING ARRANGEMENT OF "PENS" OR "CHECKERS," WASH-BOX AND HATCHES.

Most vessels have holds constructed of wood. The surface of the wood is very rough in most cases, due principally to softening by water and to damage from forks. Some of the newer vessels have cork insulated holds lined with metal.

Several systems of mechanical refrigeration are in use. One system employs the circulation of cold air around the entire hold, between the metal lining and the hull and deck of the boat. Another utilizes cooling coils in the upper part of the hold. Pens for storage are situated on each side of the hold, and on the large trawlers have an average dimension of 4½ feet by 4½ feet wide by 9 feet high. The sides are built up with "pen boards" as the height of the fish and ice increases. The individual pens, divided horizontally by removable boards, vary in depth but they are generally about 5 feet deep in the large vessels. Several newer vessels, however, have pens about half this depth. A passageway or "slaughter house" extends down the center and for the entire length of the hold. This space is often used for storing fish which are caught toward the end of the trip. The "pen boards" are painted in most instances when new, but the paint soon wears off and they are then often used in this condition until discarded. After a short time, they become quite rough and water-soaked. A typical lay-out of the hold of New England trawling vessels is illustrated in Figure 3 (see p. 13).

UNLOADING FISH

Fish are transferred from the vessel to the dock in metal-framed canvas baskets holding from 75 to 125 pounds. A mechanically-operated winch on the vessel is used for hoisting the baskets from the hold. In unloading larger vessels, several

baskets are used simultaneously, one being emptied while the others are being filled. Fish caught toward the latter part of the voyage are generally unloaded first because of greater demand for the fresher fish. Forks are used for removing

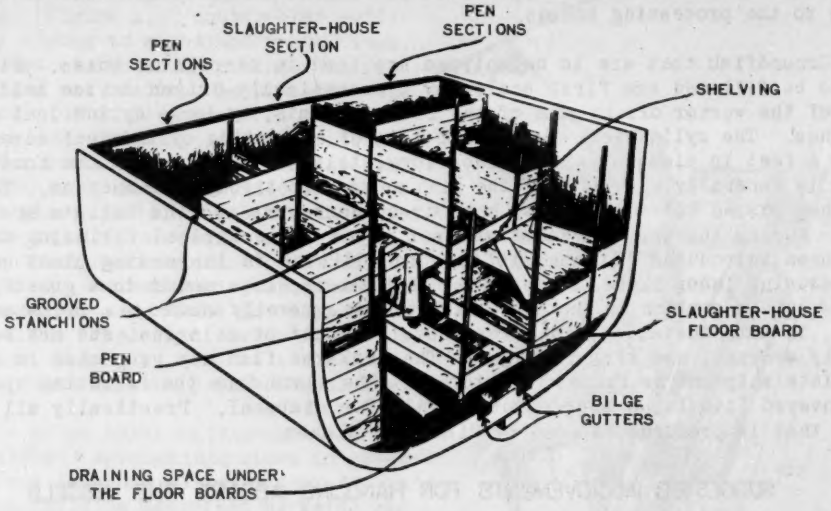

FIGURE 3 - TYPICAL LAY-OUT OF THE HOLD IN NEW ENGLAND TRAWLING VESSELS.

fish such as haddock, cod, whiting, etc., from the pens and for placing them in the unloading baskets. At some ports, shovels are used for handling rosefish and flounders, although this results in the inclusion of considerable ice in the weighing boxes. In certain ports, a 5 percent or more discount in weight is allowed to take care of extra ice.

The method of weighing varies somewhat at the different ports. At one of the principal fishing ports, baskets of fish are dumped into wooden boxes of 500 pounds capacity which are on platform scales. At other ports, fish are usually weighed in the baskets or are dumped from the baskets onto pan scales.

HANDLING ON THE DOCK AND IN THE PACKING HOUSES

After being weighed, fish are forked from the boxes into two-wheeled, wooden carts of about 1,000 to 2,000 pounds capacity, or, more rarely, into boxes having a capacity of about 500 pounds which are carried on small trucks pulled by a tractor. Fish in carts and boxes are usually iced and covered with a tarpaulin if they are to remain on the pier for any length of time prior to packing or processing.

Removal of fish from the carts is accomplished in one of several ways. If barrel orders are to be filled, the fish are placed in barrels by hand or with a grapple hook. The general practice, however, is to fork the fish from the carts, particularly if they are to be placed on filleting tables. In some cases, the carts are tipped so that the fish are dumped onto the floor before being forked onto the tables. In other instances, fish are dumped onto a platform and carried by mechanical conveyors to the filleting room. Several processors use carts having removable bodies which are lifted from the chassis with a hoist and conveyed to the processing room. When boxes are used for bringing the fish from the boats

to the processing plants, they are hoisted mechanically, carried by an overhead conveyor to the desired point, and dumped onto a table or into a hopper. Fish that are weighed in baskets or in pan scales are usually dumped into boxes or barrels if they are to be shipped out, or into boxes or small carts if they are going to the processing houses.

Groundfish that are to be shipped are iced in barrels or boxes. Fish that are to be filleted are first scaled by a mechanically-driven device held in the hand of the worker or, in some of the largest plants, by large cylindrical scaling machines. The cylindrical machine consists of a rotating cylindrical screen drum about 4 feet in diameter and 20 feet long, tilted slightly from the horizontal. Water is generally sprayed onto the fish as they go through the machine. The fish are then passed to filleters by hand or by conveyors and the fillets are cut by hand. During the past 2 years, several types of mechanical filleting machines have been introduced (Ziemba, 1946). In addition to increasing plant capacity and reducing labor costs, it is stated that the machines result in a greater yield of the edible portion of the fish. Fillets are generally washed in a brine solution which, in some instances, contains a small amount of chlorine, and are weighed, usually wrapped, and then packaged. The packaged fish may be packed in ice for immediate shipment or frozen for storage. The waste from the filleting operation is conveyed into large hoppers or barrels for disposal. Practically all of the waste that is produced is used by fish meal plants.

SUGGESTED IMPROVEMENTS FOR HANDLING ABOARD THE VESSELS

Present methods of handling most species of North Atlantic fish aboard the vessels and during the unloading operations are based largely upon the use of forks from the time the fish are eviscerated until they are placed in the baskets for unloading. Further use of forks is frequently encountered from the time the fish are weighed until they are shipped. Consequently, a number of fork holes are made in the flesh of many of the fish. Each of these holes serves as a portal of entry for bacteria, if not actually the site of an inoculation of bacteria into the flesh by the tines of the fork. The fork holes may be a focal point of rapid spoilage under certain conditions and also cause unsightly red spots in the flesh, which are particularly noticeable in fillets.

Further damage to the flesh may be brought about by bruising, thus causing softening, discoloration of the flesh, and subsequent rapid spoilage by enzymes and bacteria. Excessive pressure on the fish in the pens is undoubtedly a major factor in causing bruising, particularly when large, jagged pieces of ice are present. The sharp edges and corners of the large pieces of ice pressing against the fish cause much physical damage. This is further aggravated by the motion of the boat in rough weather.

All of these factors, even though they may seem insignificant if taken separately, become very important when added together. Their cumulative effect over the entire length of the trip will have an adverse influence on the condition and ultimate appearance and keeping quality of the fish.

Various new methods were considered for improving handling practices aboard vessels and at the ports during the course of this study. Very little unutilized space is to be found on a fishing vessel, and, consequently, this has been taken into consideration when making recommendations for changes. Practically all of the changes which are suggested can be made with little or no additional labor and space requirements and at a relatively small additional cost.

A means of eliminating the use of forks for transferring the fish from the wash-box to the hatch that would be practical without prohibitive cost was suggested by Puncochar and Pottinger in an earlier report (1939). A rectangular basket or grating (Figure 4), constructed sufficiently strong to withstand rough usage, and sloped at the ends so that the fish will slide out readily, is placed in the wash-box. When it is desired to remove the fish, one end of the basket is raised, the water drains from the fish and they are discharged directly into the hatch or into wire baskets. No additional space would be required on deck for installation. Another possible means of eliminating forks in the washing operation would be through the use of shallow dip nets to transfer the fish from the wash-box to the hatch. These are used to a small extent in some of the processing plants.

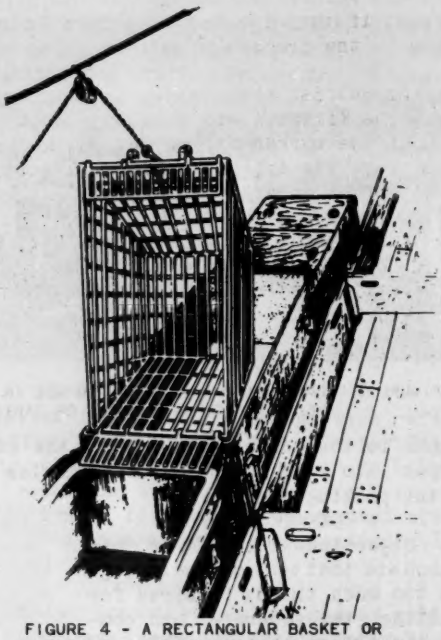

FIGURE 4 - A RECTANGULAR BASKET OR GRATING IN POSITION FOR DISCHARGING FISH INTO HATCH.

The extra handling introduced by the segregation of species into sizes in piles on deck and later transferring them to the wash-box could be minimized by using two wash-boxes or one wash-box with two gratings so that practically all of the drawn fish could be washed as they are eviscerated. The additional handling of the fish with forks when being transferred from the pile to the wash-box increases the possibility of bacterial contamination. Throwing them to one side undoubtedly causes some bruising as well.

The distance that the fish drop from the hatch to the floor of the hold may be as much as 9 to 10 feet. In order to lessen the bruising caused by the impact of hitting the floor from such a height, fish can be lowered into the hold in wire baskets.

Bruising and crushing of the fish in the pens can be reduced through the use of shallower pens as suggested by Ellison (1934) and by Puncochar and Pottinger (1947). Pens of one-half the present depth (5 feet) markedly reduce the amount of physical damage and loss in weight, and result in a better quality of fish upon landing.

SUGGESTED IMPROVEMENTS FOR UNLOADING VESSELS

The problem of handling fish during the unloading of the boats at their destination becomes more complicated because of the necessity of separating the fish from the ice before they are hoisted to the pier for weighing. The time element is important because employees of filleting plants are waiting for sufficient fish to be brought to them in order to begin operations. Likewise, the packing houses have orders to be filled which often require large quantities of fish to be shipped out quickly. Therefore, the boats must be unloaded rapidly in order to supply the demand for fish. It is common practice to unload from 100,000 to 200,000 pounds of fish from a single large trawler within 4 to 6 hours.

One of the principal methods in use at present for unloading and weighing fish requires the use of forks in removing the fish from the weighing box. This not only causes further damage to the fish but also accounts for piercing and splintering of the wood of the weighing box, resulting in a surface that accumulates fish scales that are difficult to remove. An improvement over this method of weighing, which eliminates forking, was found to be in use at some ports. A platform (Figure 5) several feet in height and of sufficient size to hold a weighing scale and 2 or 3 workmen, is used. The fish are hoisted in the usual manner to the scales, weighed in the canvas basket used for unloading, and then dumped into a short chute which carries them to boxes or carts for transportation to the packing houses.

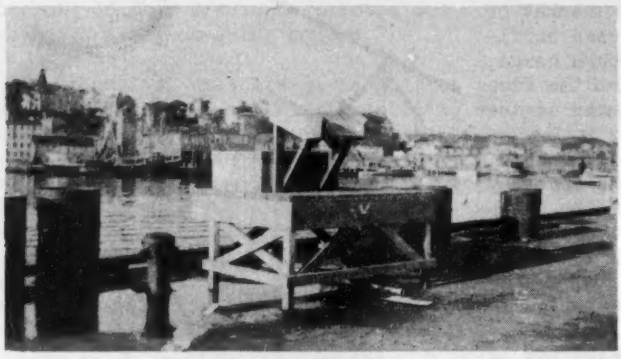

FIGURE 5 - ONE TYPE OF PLATFORM FOR USE IN DISCHARGING WEIGHED FISH INTO BOXES OR CARTS.

Objections to the use of this method are that too many weighings and too much time is required for handling the separate and comparatively small quantities of fish that are contained in the canvas baskets. An improvement over this method was suggested by Puncochar and Pottinger (1939) and Firth (1947) and was used for a short period at one of the principal ports (Figure 6). After weighing, the box is tilted, the end is opened, and the fish slide into the cart. The box should be lined with corrosion-resistant metal, having round inside corners with all seams soldered to prevent water and gurry from seeping beneath the lining.

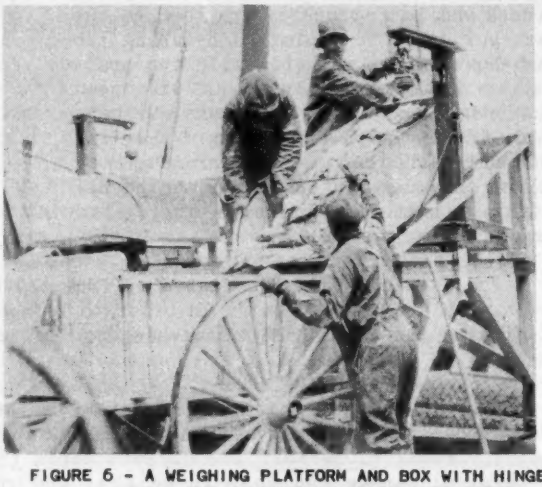

FIGURE 6 - A WEIGHING PLATFORM AND BOX WITH HINGED END FOR DISCHARGING FISH INTO CARTS.

SUGGESTED IMPROVEMENTS ON THE DOCK AND IN THE PACKING HOUSES

As previously mentioned, it is common practice to place the fish in carts or boxes after being weighed. These containers are of wooden construction and when new, are ordinarily painted on all surfaces. A bakelite varnish is sometimes used on the inside surfaces, providing a tough coating which is more readily cleaned than painted surfaces. Since the carts and boxes are constructed of wood, inside surfaces are frequently found to be roughened and covered with an accumulation of fish scales and gurry. Fish scales and gurry, when once dried, are difficult to remove. Consequently, boxes and carts should be cleaned thoroughly with a

stiff brush and running water at the end of the day. Where live steam is available, it should be used in preference to the brush method for cleaning.

Corrosion-resistant metal linings would be more satisfactory than paint or varnish for carts and boxes. By having the metal overlap the edges of the wood, soldering all seams and nail heads, and rounding the inside corners and joints, a lining would be provided which would be impervious to water and gurry. The metal could be more readily cleaned than wood and would provide a more sanitary surface. The use of forks for transferring the fish from the carts to the filleting table can be eliminated through the use of shallow dip nets. The dumping of fish from the carts to the floor is not good practice. Bacterial contamination from this source will hasten deterioration.

MISCELLANEOUS CONSIDERATIONS

During a number of trips that were made on the vessels, several faulty practices other than those already mentioned were found in use which have a bearing on the ultimate keeping quality of the fish.

A practice often seen was that of leaving the "trash" fish on deck, after taking out the commercially important varieties. This "trash" was only partially removed at times and it was often allowed to remain on deck long enough to become quite putrid. Bacterial contamination of fresh fish that are dumped on deck may result from this source. Consequently, all "trash" fish should be removed after each haul and the deck and "checkers" washed down thoroughly to keep contamination at a minimum.

The water in the wash-boxes becomes bloody and contains much extraneous matter after a small quantity of fish are washed. Wash-boxes were frequently found to be only partially drained before the next lot of fish was placed in them. As a result, subsequent lots of fish are not washed as well as they might be if clean water were used. Therefore, the wash water should be drained completely after each lot of fish is washed.

Some attempt should be made to improve the surface treatment of the "pen boards" that are used for making up pens. These boards are often used without being painted, and even when painted, the coating is usually worn off to the bare wood in a short time. In this condition, they quickly become water-soaked and rough, making cleaning difficult and thus producing a medium for the growth of bacteria. The boards should be thoroughly dried and coated at frequent intervals, with consideration of the use of the newly-developed water-resistant plastic resins.

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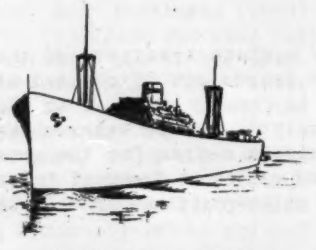
HOW TO LABEL GOODS FOR SHIPMENT ABROAD

A comprehensive booklet containing detailed descriptions of how to mark and label goods or their containers for export to foreign countries has just been issued by the Office of International Trade.



Entitled Foreign Marks-of-Origin Regulations, the booklet tells exporters about the customs regulations prescribed by the various foreign countries as a condition of entry and sale to avoid goods being subject to possible customs fines or delays in or even refusal of admission.

Marking is usually routine in foreign trading. However, it should be done, in full compliance with regulations, at the time the goods are being manufactured or packed. It is often difficult or expensive to attempt to affix the proper markings later on when the goods are about to be exported or after the shipment has arrived at the foreign port. Where special markings of origin are necessary for specified products or under special conditions, such requirements are given in detail.

The booklet is available from the U.S. Department of Commerce, Special Business Service Desk, Room 6066, Washington 25, D. C., for 35 cents per copy.

TECHNOLOGICAL RESEARCH IN SERVICE LABORATORIES

OCTOBER 1947

Seattle, Wash.

Spectrophotometric assays indicated that cod livers from Alaska contained about 1,200,000 units of vitamin A per pound. The highest potencies were obtained with livers taken during the early part of the season; that is, May 25 to June 2. The lowest potencies were obtained with those obtained at the end of the season between July 4 and August 9.

* * *

A series of 10 lectures on fishery methods was given before the fishery technology class of the University of Washington.

* * *

FISHERY TECHNOLOGICAL LABORATORY
SEATTLE, WASHINGTON

Because of considerable difficulty encountered in moisture and especially oil determinations for some parts of salmon waste, modified procedures were tested. The method employing the Majonnier digestion flask seems to give the most satisfactory results to date on oil determination in milt and roe.

College Park, Md.

Several series of sea trout fillets were prepared and frozen to determine the effect on quality by (1) freezing immediately after catching and filleting, (2) freezing after holding on ice for several days, (3) freezing, partial thawing, and refreezing, and (4) freezing, complete thawing, and refreezing. Monthly palatability tests will be conducted for one year to determine storage life at 0° F. Additional series were prepared to determine the effect of fluctuating storage temperatures on the quality of frozen fillets in filled and partially-filled packages.

* * *

A series of packs were made of whiting (silver hake) to determine possible improvements in processing over what is now used commercially. A number of taste tests were made of dishes prepared from commercially canned whiting.

* * *

A paper entitled "Some General Aspects of Fishery Sanitation" was presented at a meeting of the International Association of Milk and Food Sanitarians.

* * *

The mobile trailer laboratory was dispatched to New Jersey to investigate the reported rapid and widespread destruction of nets.

Ketchikan, Alaska

Of the various alkali digestion methods tested for extraction of oil from salmon cannery wastes, the best results so far have been obtained with 2½ percent sodium hydroxide and 20 minutes digestion.

* * *

The toxicity of clams from various beaches in Southeastern Alaska varies widely. Additional samples are being sought to give more thorough coverage. Processing toxic clams reduces the toxin present about 65 percent.

* * *

Frozen ground whole pink salmon waste has been delivered to the Experimental Fur Farm at Petersburg for feeding tests on mink.

* * *

Canned butter clams processed by a variety of methods were examined and also tested in recipes.

OVEN FRIED FILLETS

2 pounds fillets
1 tablespoon salt
1 cup milk
1 cup bread crumbs
4 tablespoons butter or other fat, melted

Cut fillets into serving size portions. Add the salt to the milk and mix. Dip the fish in the milk and roll in crumbs; place in well greased baking pan. Pour melted fat over fish. Place pan on shelf near the top of a very hot oven 500° F. and bake 10 to 12 minutes or until fish flakes easily when tested with a fork. Serve immediately on a hot platter, plain or with a sauce. Serves 6.

OTHER FISHERY NOTES

Additions to the Fleet of U.S. Fishing Vessels

A total of 131 vessels of 5 net tons and over received their first documents as fishing craft during October 1947, compared with 98 in the same month the previous year. The State of California led with 25 vessels documented during the month, followed by Louisiana with 18 vessels, and Florida with 14 vessels, according to information released by the Bureau of Customs, Treasury Department.

During the first 10 months of 1947, a total of 1,156 vessels received their first documents as fishing craft, compared with 930 for the same period the previous year. It is estimated that about 1,300 vessels will receive their first documents as fishing vessels during 1947. This will bring the total for the past three years to about 3,100. The number of fishing craft of 5 net tons and over engaged in the capture of fishery products in 1940 totaled 5,562.

Vessels Obtaining Their First Documents as Fishing Craft

Section	October		Ten mos. ending with October		Twelve Months
	1947	1946	1947	1946	1946
	Number	Number	Number	Number	Number
New England	4	12	69	65	86
Middle Atlantic	7	6	62	58	74
Chesapeake Bay	7	7	84	57	71
South Atlantic and Gulf	58	39	421	299	351
Pacific Coast	39	22	383	340	375
Great Lakes	6	5	69	64	76
Alaska	8	4	36	23	19
Hawaii	2	3	20	11	17
Unknown	-	-	12	13	16
Total	131	98	1,156	930	1,085

Note: Vessels documented by the Bureau of the Customs are craft of 5 net tons and over.

Fish Dictionary

The Association for Research in Food Industries which represents an Organization and Cooperation Center for food research intends, in cooperation with the manager of the Experimental Fishing Institute in Hamry near Hlinsko, to elaborate and publish a special dictionary dealing with terms used in fisheries of various countries, according to the U. S. Embassy in Prague, Czechoslovakia. This dictionary is to include all expressions in literary language, and the local and commercial names of fish used in most European languages.

Import Quota Filled

The Bureau of Customs, U. S. Treasury Department, announced on November 13, that based on preliminary figures showing the imports, for consumption, of commodities within quota limitations, provided for under trade agreements, the quota of 23,906,423 pounds set for: fish, fresh or frozen, fillets, etc., cod, haddock, hake, pollock, cusk, and rosefish; is filled. All fish imported under that category in excess of the quota is dutiable at the rate of 2½ cents per pound.

Potency of Fish Liver Oils in Japan

The following table appeared in Report No. 109 of the Natural Resources Section of General Headquarters, Supreme Commander for the Allied Powers:

Vitamin A and D Potency of Liver Oils from Main Species of Fish in Japan

Species	Vitamin A Potency (USPU)			Vit. D Potency (Int. Units)		(Rat Test)[a]
	Minimum	Maximum	Average	Minimum	Maximum	Average
Jewfish	319,000	1,393,300	388,000	ND	ND	ND
Bluefin tuna	32,900	429,900	100,000	ND	ND	60,000
Menuke (Rockfish)	39,000	440,000	88,000	ND	ND	ND
Swordfish	52,000	178,000	88,000	ND	ND	ND
Meji tuna	33,900	51,400	33,000	ND	ND	ND
Mebachi (Big eye tuna)	59,200	88,300	44,000	ND	ND	ND
Yellowfin tuna	30,600	84,900	44,000	ND	ND	ND
Flounder	3,900	42,900	22,000	ND	ND	ND
Hammerhead shark	2,700	44,100	22,000	ND	ND	ND
Sperm whale	40,000	100,000	70,580	ND	ND	ND
Skipjack	9,900	68,100	12,000	10,000	60,000	23,000
Albacore	26,900	44,900	34,000	ND	ND	ND
Yellowtail	6,600	14,000	10,000	ND	ND	ND
Mackerel	5,200	67,000	25,000	400	6,000	5,500
Pollock	2,000	15,000	7,000	ND	ND	ND
Cod	800	2,400	1,600	ND	ND	ND

a/Facilities for making AOAC chick tests are unavailable in Japan, so Vitamin D is shown in international units (rat test). Both Vitamin A and D liver oils were formerly sold on results of laboratory findings in the United States.

ND: No data available.

SOURCE: Bureau of Fisheries, Ministry of Agriculture and Forestry.

Sardine and Mackerel Regulations

Emergency regulations limiting the size of sardines and mackerel caught by commercial fishermen went into effect December 1 as the result of recent rulings of the California Fish and Game Commission.

At their November meeting, the commissioners accepted the recommendations made by representatives of the fishing industry and the Bureau of Marine Fisheries limiting 25 percent of commercial fish hauls to jack mackerel less than 8 inches in length; 11-inch Pacific mackerel; and 7-inch sardines. The regulation is effective until July 1, 1948.

Survey of Fish Processors

A recent publication of interest to the fishing industry is Survey of Fish Processors--Summary of Operating and Unit Cost Data, Various Periods 1936-1944, No. 23, OPA Economic Data Series. This is one of a series of publications through which the Economic Data Analysis Branch of the Office of Price Administration plans to make available to interested persons in commerce and industry as much of the generally useful economic and financial information submitted to that Office as can be summarized and released with the requirements of confidentiality imposed by statute.

It presents cost and financial information on such processed fish as canned tuna, salmon, pilchards, mackerel, Maine sardines, oysters, shrimp, crab meat, and soft shell clams.

Copies of this publication may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. The price is 10 cents.

Purchases of Fish by Department of Agriculture

The United States Department of Agriculture contracted for 146,000 actual cases of fishery products, valued at $453,290, during October. Delivery of the entire quantity of squid has been made. The contracts for whiting (silver hake) were amended to allow the substitution of herring (alewives and/or sea herring). This was done as the contractors were having difficulty in fulfilling the contracts.

Purchases of Fishery Products by USDA

Commodity	Unit	October 1947		July thru Oct. 1947	
		Quantity	F.O.B. Cost	Quantity	F.O.B. Cost
FISH			Dollars		Dollars
Hake, canned	Actual Cases	-	-	65,838	200,214
Whiting, " 1/	" "	119,000	362,840	294,000	902,840
Herring, "	" "	-	-	79,179	291,829
Mackerel, "	" "	-	-	36,798	143,309
Tuna, minced, canned	" "	-	-	7,800	12,564
Shad, canned	" "	-	-	500	1,800
Squid, "	" "	27,000	90,450	27,000	90,450
Total	" "	146,000	453,290	511,115	1,643,006

1/Contract was amended to permit substitution of herring on undelivered balance. Actual cases of whiting (silver hake) contain 24 - 15 oz. cans.

Wholesale and Retail Prices

The wholesale index for all commodities, continuing the upward movement of the Bureau of Labor Statistics' general index of commodity prices for the eleventh consecutive week, reached a new postwar peak of 157.4 percent of the 1926 average, 29.3 percent above the corresponding week a year earlier but 5.9 percent below the all-time peak of May 1920.

Largest advances were for agricultural commodities, with farm products up 2.6 percent and foods, 4.1 percent.

Retail prices in 56 large cities of the United States moved up 3.6 percent from August 15 to September 15, reaching a new record high for the fourth consecutive month. Prices of meat, poultry, and fish as a group attained new highs for the fifth consecutive month, reflecting record prices established in primary markets. Fresh fish prices rose 5 percent, and canned pink salmon, 6 percent.

Wholesale and Retail Prices

Item	Unit		Percentage change from--	
Wholesale: (1926 = 100)		Sept.13,1947	Aug.16,1947	Sept.14,1946
All commodities	Index No.	157.4	+3.1	+29.3
Foods	do	180.9	+5.0	+41.2
Fish:		Sept.1947	Aug.1947	Sept.1946
Canned salmon, Seattle:				
Pink, No. 1, Tall	$ per doz. cans	4.53	+5.1	+85.8
Red, No. 1, Tall	do	5.65	+1.0	+23.6
Cod, cured, large shore, Gloucester, Mass.	$ per 100 pounds	13.50	0	0
Herring, pickled, N. Y.	¢ per pound	12.0	0	0
Salmon, Alaska, smoked, N. Y.	do	35.0	0	0
Retail: (1935-39 = 100)		Sept.15,1947	Aug.15,1947	Sept.15,1946
All foods	Index No.	203.5	+3.6	+16.9
Fish:				
Fresh and canned	do	275.7	+5.1	+15.9
Fresh and frozen	¢ per pound	40.0	+4.7	- 2.0
Canned salmon:				
Pink	¢ per pound can	44.9	+5.9	+87.1

VITAMIN OILS FROM SALMON CANNERY OFFAL

The alkali digestion process was found to be adaptable for the preparation of vitamin A bearing oils from total salmon cannery waste.

Several variations were made in the type of raw material selected from the total cannery waste to observe the effect of the presence or absence of specific parts of the waste on the digestion process and on the vitamin A content of the oil produced therefrom. From the standpoint of vitamin A recovery in an oil with the highest possible potency the best portion of the cannery waste to utilize is the viscera. Some increase in the facilitation of the digestion may be made by the removal of the gonads from the viscera.

The oil yield and the vitamin A content of the oils in U.S.P. units per gram of oil varied with the species of salmon and with the particular parts of the waste used for the digestions.

--Abstract of Paper Presented at November 25 Meeting of Puget Sound Section of the American Chemical Society.

FOREIGN FISHERY TRADE

Bulgaria

STATE-AUTONOMOUS FISHERIES ENTERPRISE: The Bulgarian Council of Ministers at its session of October 29, 1947, established a State-autonomous self-supporting enterprise "State Fish Hatcheries and Fisheries," which is to take over all State interests both in deep-sea fishing and in fish hatcheries and other State developmental projects connected with the industry, according to the American Legation, Sofia, Bulgaria. This is another in a series of similar decisions consolidating State interests in given fields under one management, and making them independent of the national budget and, in theory, self-supporting.

Text of the decision follows:

On the strength of Art. 3 of the Law for Self-Support of State and State-autonomous Enterprises, approval is given to the following:

1. The enterprise "State Fish Hatcheries and Fisheries" is created under the Ministry of Agriculture and State Domains, to be self-supporting.

2. This enterprise is to absorb:

   (a) The department for deep sea fishing at the Directorate of Water Communications, together with vessels, fishing equipment and properties;

   (b) State lands or lands attached to the State Land Fund, which are of interest to the "State Fish Hatcheries and Fisheries." These lands are to be determined by order of the Minister of Agriculture and State Domains upon report of the Main Director of the enterprise.

   (c) The "State Fish Hatcheries and Fisheries" is allowed choice for the utilization of: coastal netting centers, ponds, lakes.

3. The "State Fish Hatcheries and Fisheries" is entrusted with

   (a) The organization of model hatcheries for the breeding of select fish in the State lands allotted for the purpose;

   (b) The organization and development of active fishing in the Black Sea, the sea-coast ponds, and in the lakes;

4. For the realization /achievement/ of the task entrusted to it, the "State Fish Hatcheries and Fisheries" is to receive gratuitously the two fishing vessels which are to be supplied from Denmark, as well as indispensable means in form of loans from the Bulgarian Agricultural and Cooperative Bank under State guarantee.

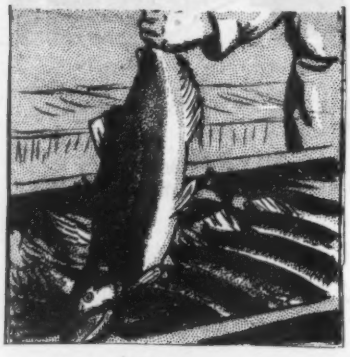
5. The constructions of the enterprise are to be included in the two-year State economic plan; the Ministry of Agriculture and State Domains, the Ministry of Commerce, the Ministry of Electrification

and the Ministry of Works are under obligation to timely and sufficient materials for the construction and equipment of the most indispensable buildings and undertakings of the enterprise.

6. The enterprise "State Fish Hatcheries and Fisheries" is to be managed in conformity with a regulation approved by the Minister of Agriculture and State Domains.

Canada

BRITISH COLUMBIA REACTION TO TARIFF TREATY: In the downward revision of tariffs at the Geneva Conference, Canada obtained many concessions from the United States, which granted tariff reductions ranging from ½ to ¾ cent a pound on a wide range of fresh and frozen fish entering the American market, according to the American Consulate General, Vancouver, B. C., Canada. However, British Columbia packers feel that their business has suffered by such action, inasmuch as the reductions which were granted were on nominal duties and no concession was made with respect to the American 25 percent ad valorem duty on canned salmon. At the same time, the British authorities reduced the Canadian preference on this item 5 percent, making packers here more vulnerable to competition in the United Kingdom.



From a commercial standpoint, salmon fishing in British Columbia constitutes the most important operation of the packing industry. As of November 14, 1947, the pack amounted to 1,492,314 cases, as compared with a pack of 1,339,336 cases in 1936. This season, the pack of pinks and chums comprised approximately 70 percent of the pack, which would have been considerably higher had the Canadian embargo on the export of fresh salmon not been removed about three weeks before the end of the fishing season. Due to this action, resulting in the export of more than 700,000 chums to the United States where fresh fish prices are substantially higher than in Canada, packers are reported to have lodged a vigorous protest with Dominion officials. The reduction in duty, mentioned above, will, it is believed, further aggravate the position of local packers unless the embargo is re-imposed next season.

The reduction in duty on smoked and kippered salmon and herring from the previous rate of 15 percent to 10 percent is meaningless as such fish is usually purchased fresh and smoked in the United States.

There has been little demand from the United States for herring packed in tomato sauce.

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FISH INSPECTION AND GRADING: This spring, the Director of the Fisheries Council of Canada presented to the Acting Prime Minister and Members of the Cabinet a brief which, in part, dealt with the Department of Fisheries. The Council recently remarked that what was said in this brief can be restated today with emphasis. A portion of the brief says:

"The Council is prepared to support wholeheartedly any sound plan for the inspection and grading of its products that should extend from the fishermen's boats to the consumer's table.

"The provision of such regulations, solely within the competence of the Federal Government, would, if efficiently and effectively administered, be a strong contributing factor to improved Dominion-Provincial relations. Further, such regulations would so stimulate domestic sales and consumer acceptance as to materially increase the consumption of fish in Canada."

Great Britain

INDIAN OCEAN FISHERY EXPEDITION: The Scottish fishing drifter MFRV No. 1 is now on the way to Mauritius via the Suez Canal to undertake a two-year survey of fishing possibilities on banks in the Indian Ocean not hitherto exploited by modern fishing methods, according to information received from the American Embassy in London.

The expedition has been organized by the Colonial Office and is financed by the Colonial Development and Welfare Act.

It is hoped that it will lead to a considerable expansion in the supply of fish to the people of Mauritius, an island with a population of some 400,000, by the establishment of a Mauritian fishing industry on modern lines. There is the possibility, too, of being able to supply dried fish to the East African market.

The drifter will "work" the banks off Mauritius and the Seychelles, and investigations will be made into the abundance of life in these waters. A general survey will be made of the ocean currents, the nature of the sea bed and the influence of these upon the abundance of fish.

The work will be directed by Dr. J. F. G. Wheeler, who was for a number of years on the staff of the Discovery Committee. He will be assisted by Dr. F. D. Ommanney, who was also on the Discovery Expedition and is the author of South Latitude and other books.

Germany

FORMER GERMAN FISHING VESSELS RETURNED BY U.S. GOVERNMENT: The United States Government is placing its share in the former German fishing fleet, consisting of 23 fishing vessels, 9 herring luggers, and from 90 to 100 fishing cutters constructed during the war, at the disposal of the Bremen Government on a lease basis for a period of 15 years, according to the American Consulate, Bremen, Germany. The Bremen Government, the contracting partner of OMGUS, will entrust the "Fischdampfer Treuhand G.m.b.H." (Trust Company for Fishing Vessels) at Bremen with the repairs,

reconstruction, and sub-chartering of the fishing vessels, which will be released by the mine sweeping service of the German Mine Sweeping Administration. The "Fischdampfer Treuhand G.m.b.H." was established by the two cities Bremen and Bremerhaven.

It is stated that most of the fishing vessels exceed the size allowed for deep-sea fishing vessels fixed at 400 gross register tons. They are vessels of from 250 to 600 gross registered tons with a fish capacity of from 1,800 to 5,000 hundredweights. The reconstruction of the vessels is to be completed during 1948. Expenditures will be financed by a loan free of interest of 18 million Reichmarks to be amortized within 10 years. Reconstruction and overhauling of the vessels will be effected at Bremerhaven, where the first 11 vessels have already arrived. The fishing vessels and herring luggers will be divided among individual fishing companies according to their war losses. Three vessels will be handed over to the GEG (Cooperatives), while fishing cutters are to be handed to individual fishermen; refugees from eastern Germany will receive priority. It is hoped that luggers and fishing cutters will be ready for operation at the beginning of 1948.

Japan

BUSINESSMEN MAY EMPLOY JAPANESE AGENTS: Foreign traders now may employ Japanese nationals or foreign nationals resident in Japan as agents subject to license by the Japanese Board of Trade (Boeki Cho) and approval by the Supreme Commander for the Allied Powers (SCAP) on an individual case basis, according to a Department of the Army release of November 25.

Payment to licensed agents may be made on a commission basis or as a payment agreed upon between the foreign trader and the agent. Non-U.S. firms are entitled to similar privileges provided payments are made in acceptable currencies.

The foreign currencies available to SCAP from such transactions will be used to purchase critical items needed in the Japanese economy, thus lessening the cost of the occupation to the American taxpayer.

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MANUFACTURE OF AGAR-AGAR: A harvest of 700,000 kan[1/] of seaweed (almost double the 380,000 kan collected in 1946) is expected for 1947, according to the Agar-agar Distribution Association. Already about 300,000 kan of seaweed have been collected, and 400,000 more may be expected by the end of the season.

From 700,000 kan of seaweed, 161,000 kan (about 1,336,000 pounds) of pure agar-agar can be manufactured. Most of this amount will be available for export in the spring of 1948.

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REMITTANCES TO JAPAN PERMITTED: The Department of State announced on November 19 that Military Government regulations in effect in Japan have been relaxed to permit the remittance of funds through commercial banking channels to any person in Japan, natural or juridical, including Japanese nationals, within the limitations prescribed by the Supreme Commander for the Allied Powers in Japan.

1/One kan equals 8.369 pounds.

This action has been taken in view of the desire of persons and organizations abroad to make remittances for charitable or similar purposes to Japanese nationals, and in anticipation of the need of foreign businessmen entering Japan to obtain funds to meet current expenses while in Japan, and of the probable need of United Nations' nationals for funds for the rehabilitation and preservation of their property in Japan. Heretofore, facilities for the remittance of funds through banking channels were available generally only to personnel and organizations officially accredited to, or connected with, General Headquarters, Supreme Commander for the Allied Powers in Japan.

Under these revised regulations, and in accordance with limitations currently in effect, any person in Japan may now receive remittances up to a maximum of $1,000 per month through any American bank licensed to operate a branch in Japan. However, larger amounts may be authorized by the Supreme Commander whenever circumstances justify such action. Outpayments will be made in yen at the military rate of conversion of 50 yen for one dollar, or, to the extent that the remittee is entitled thereto on the basis of theater regulations, in Military Payment Certificates or other dollar facilities, including dollar deposit accounts in branches of non-Japanese banks in Japan.

At present, the only American bank having a branch in Japan through which remittances may be affected, is the National City Bank of New York. However, it is expected that in the near future, the Chase National Bank of the City of New York, and the Bank of America of San Francisco, will also have established branches in Japan.

* * * * *

SCAP OPENS FOREIGN TRADE OFFICE IN NEW YORK: The Department of the Army and the Supreme Commander for the Allied Powers announced on December 16 that an office to facilitate trade with Japan is being opened at 292 Madison Ave., New York, N. Y. This agency will be known as "SCAP Foreign Trade New York Office" and is being established by authority of the Supreme Commander for the Allied Powers. Mr. P. A. McDermott will be in charge as SCAP Foreign Trade Representative in the United States.

At an early date, the agency will offer full sales service to buyers who desire to purchase Japanese commodities without either travel to Japan or arranging such purchases through transactional correspondence. In addition, the office will maintain a display room for Japanese merchandise.

The Department of the Army Civil Affairs Division describes the existing procedures which continue in effect for dealing directly with Japanese businessmen. The establishment by the Supreme Commander for the Allied Powers of a United States office to facilitate Japanese trade will in no way disturb former arrangements, but will open a point of personal contact with SCAP representatives for American businessmen.

Some of the rules and procedures controlling transactional correspondence in matters of limited foreign trade with Japan are summarized as follows:

Inquiries and preliminary negotiations between traders abroad and traders in Japan may be carried on directly through the regular mails or commercial cable in any language or commercial code acceptable to the foreign trader's country. Firm contracts will be negotiated as follows:

I. Exports

(A) After preliminary negotiations, the private Japanese trader applies to BOEKI CHO (Japanese Board of Trade) to transmit firm sales offer to buyers abroad.

(b) Firm offers to sell can be made only by the BOEKI CHO and will be approved by the Supreme Commander for Allied Powers before being transmitted to the foreign trade. Acceptances will be subject to SCAP review.

(c) A firm offer to sell in minimal form such as might be conducted by cable can read as follows: "BOEKI CHO Japanese Board of Trade offers (quantity with variation clause when necessary, description and price). Delivery FOB ocean vessel or aircraft Japanese port or airport buyers option not later than (date). Inspection (stated according to specific BOEKI CHO sales contract). BOEKI CHO arranges shipping your account with transshipment (not) permitted and partial deliveries (not) permitted. Offer subject your establishing irrevocable letter credit in favor BOEKI CHO for (state amount) to cover purchase price including permissible overshipment consular invoices freight C if any. Available for 30 days after final delivery against sellers sight draft accompanied by commercial invoice full set negotiable on board ocean bill of ladings consular invoices packing list inspection certificate. Non-delivery for causes beyond sellers control operates as a cancellation of contract to extent of nondelivery. Cable your acceptance and specific shipping instructions. Have bank cable notification of letter credit immediately. SCAP not party to contract which is between yourself and BOEKI CHO only."

(d) Upon receipt of acceptance as above, contract is considered completed. Confirmation copy of contract will be forwarded by air mail to buyers.

(e) Above cable procedure is considered less desirable than forwarding formal contract and securing acceptance against this contract.

II. Imports (From abroad to the BOEKI CHO for action).

(a) BOEKI CHO will request SCAP to review the firm offer.

(b) If acceptable, SCAP will approve and instruct BOEKI CHO to cable firm acceptance usually on CIF basis. This cable will also provide for method of payment as instructed by SCAP.

III. Authorized Agents in Japan.

Authorized agents in Japan for traders abroad may negotiate directly with the BOEKI CHO and sign contracts on behalf of their principals when specifically authorized by them to act in this capacity. The regulations concerning the appointment of agents in Japan permit the private supplier or exporter to act as an agent, but not as a paid agent for the buyer in the same transaction in which he serves as supplier.

Regulations applying to the use of commercial cables are as follows:

Persons authorized as agents in Japan by and for traders or other business interests abroad may now send transaction messages on a receive ----- to ----- pay basis. Messages may be in commercial code or a foreign language acceptable

to the country of destination. Such messages must be prepaid in foreign exchange. To establish transferred account for an agent in Japan, the trader should:

(1) Send letter with two copies to agent in Japan stating that the trader will accept collect messages from the agent through a commercial cable company designated by the trader. This privilege may be granted on an indefinite no-limit basis, or for express length of time with a specific ceiling. Agent will present letter to the Japanese Ministry of Communications.

(2) Submit copy of above letter to the commercial cable company so that verification by the Japanese Ministry of Communications will be expedited.

There are six types of Boeki Cho sales contracts which can be negotiated. They are:

(1) that providing for general inspection of merchandise in Japan by buyers, inspectors, or by BOEKI CHO if no inspector is appointed, and requiring an inspection certificate to be provided, as to quality and condition (JX 1).

(2) that providing for sale of merchandise on an "as is" basis and not requiring the seller to furnish inspection certificate (JX 2).

(3) that providing for sale of merchandise on basis of stated branch name without further warranty as to quality, grade or condition. No inspection certificate required (JX 3).

(4) that providing for buyer to specify recognized inspection agencies - laboratories, authoritative organizations, etc. Inspection certificate required which is final as to quality (JX 4).

(5) that covering sale of classes of commodities requiring preliminary determinations of content of merchandise by seller; adjustments to be made after analysis at destination. Seller's certificate of preliminary determination of content required (JX 5).

(6) that covering sale of merchandise subject to pure food and drug administration inspection on a no-pass, no-sale, no-replacement basis, and providing for refund of invoice value of items not passing inspection. Sellers' inspection certificate also required (JX 6).

The regulations governing the shipment of samples state that Japanese exporters are permitted to send samples to interested buyers. However, valuable samples must be paid for before delivery. Although a license is required, in general, the customary prewar methods for handling shipments of samples will prevail.

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WHALE BLUBBER FOR TEXTILES: A process for manufacturing a new textile from the connective tissue fiber of whale blubber has recently been developed, according to Weekly Summary, No. 103, Natural Resources Section of General Headquarters, Supreme Commander for the Allied Forces. A cold press method of extracting oil in the new process produces an oil more uniform in its physical qualities than that recovered by the present method.

The fibrous material in whale blubber does not have sufficient nutritive value to affect the food situation should the tissue be diverted to the production of cloth.

Mexico

CANNED FISH DUTY: Pursuant to the United States-Mexican Provisional Agreement, Mexico published two decrees in its Diario Oficial of December 15, both effective five days thereafter--one covering the specific rates of duty on 132 tariff fractions (items) in Schedule I of the Trade Agreement to compound rates at levels equivalent to those prevailing in 1942 and the other converting the rates on 12 fractions to levels higher than those prevailing in 1942.

Decree No. 1 - Items Restored to 1942 Levels

Fraction No.	Description	Dutiable Unit for Specific Portion	Compound rates (specific plus ad valorem)	
			Specific (in pesos)	Ad valorem (percentage)
1.21.02	Canned salmon weighing with the immediate container up to 5 kilograms, provided the container is labeled to indicate contents.	Legal kilogram	.80	25
1.21.04	Canned sardines (Sardina caerulea) in tomato or mustard sauce or oil, whose weight, including the immediate container, is not less than 210 grams, provided the container is labeled to indicate the type of sardine and its weight.	do	.50	20

Source: Foreign Commerce Weekly, December 27, 1947 issue.

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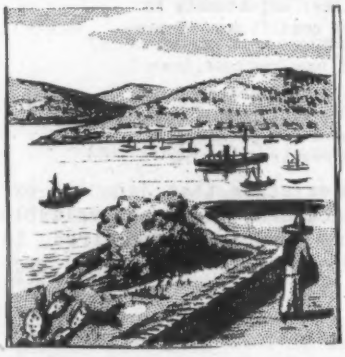
NEW IMPORT DUTIES: The new Mexican import law published in the Diario Oficial on November 13 and effective 30 days from date of publication, makes various changes from the 1929 law with respect to fish and fishery products. The most notable change is the addition of ad valorem duties to the previous specific duties. In general, with the exception of preserved fishery products, the specific duty has been cut in half and an ad valorem duty of 10 percent has been affixed. Preserved fishery products carry approximately the same specific duty as previously with an additional ad valorem duty of 30 percent. The classification has been considerably simplified and most items previously separated are now grouped under one heading. The duty on canned salmon and sardines is as fixed by the trade agreement.



It is not expected that these changes will make a great deal of difference as far as the United States is concerned, as our exports of edible fish and fishery products to Mexico are insignificant. In 1944, they amounted to $37,600; in 1945, $61,700; and in 1946, $97,000.

The new duties with respect to fish and fishery products are as follows:

Mexican Tariff Item	Description of Product	Unit	Rate of Duty Pesos 1/	Ad. Val.
1.02.00	Live fishes, crustaceans and molluscs of any species	G.K. 2/	0.05	plus 10%
1.11.00	Fresh or frozen fish or shellfish of any species	G.K.	0.10	plus 10%
1.21.00	Caviar	L.K. 3/	0.35	plus 30%
1.21.02 T.A.	Preserved salmon with weight including immediate container not more than 5 kilos, and providing contents is labeled on container	L.K.	0.70	---
1.21.04 T.A.	California sardine (Sardina caerulea) preserved in tomato, mustard, or oil, with weight including immediate container not less than 210 grams, and providing type of sardine and contents is labeled on container	L.K.	0.70	---
1.21.09	Preserved fish	L.K.	0.70	plus 30%
1.21.10	Preserved shellfish of any species	L.K.	0.30	plus 35%

1/ One peso equals 20.6 cents in U. S. currency.
2/ G.K. abbreviation for Gross Kilogram this equivalent to gross weight.
3/ L.K. abbreviation for Legal Kilogram this means the net weight of the product plus its container or wrapping but does not include the master container if such is used.

Newfoundland

NEWFOUNDLAND AND THE GENEVA TARIFF NEGOTIATIONS: The reaction in Newfoundland to the general announcements concerning the trade agreements negotiated at Geneva has been one of strong approval, according to the Consulate General, St. John's, Newfoundland. The principal points attracting comment were:

1. The binding of the rate on fish fillets and the introduction of a new type of quota system for fillets.
2. The halving of United States duties on fish oils of various types.
3. The reduction in the duties on salt codfish entering Brazil.
4. The general reduction in the cost of living owing to tariff concessions made by the Newfoundland Government.

Since fishery products constitute the most important single part of Newfoundland's exports, local fishery circles followed negotiations closely and appeared well satisfied with results in general. Some disappointment was registered over the failure to secure a reduction in the United States rate on fish fillets. However, the binding of the present rate was regarded with some satisfaction, and the new proviso introduced into the quota system was considered of prime importance. This proviso stipulated that no more than 25 percent of the total amount to be allowed entry under the lowest duty could be supplied in any one quarter of the year. This assures that countries competing with Newfoundland (e. g., Canada, Norway, and Iceland) will not be able to take advantage of earlier peak periods of output each season.

When negotiations are resumed three years hence (at which time the present agreements expire), it may confidently be anticipated that the first and most important item on the Newfoundland agenda will be an effort to secure a reduction in the United States rate on fish fillets.

Fishery circles anticipate increased export of fish oils to the United States as a result of the halving of duties on herring oil, seal oil, and whale oil, and increased exports of salt codfish, particularly to Brazil. The Brazilian duty was reduced by two-thirds and a consumption tax eliminated. Brazil at one time was Newfoundland's largest single customer for salt codfish.

Nicaragua

FISHING REGULATIONS: The present Nicaraguan fishery laws are under the direct control of the Collector General of Customs, according to a November 24 report of the U. S. Embassy at Managua. Every boat or ship wishing to fish in Nicaraguan waters must obtain a fishing permit from the Customs and pay the following fees at all Nicaraguan ports:

Fishing Permit:

(a) License Fee (patente de pesca) valid for six months:
For each gross ton of vessel:
For mother-of-pearl and shellfish ... U.S. $1.00
Turtles, Sponges and others ..... .50

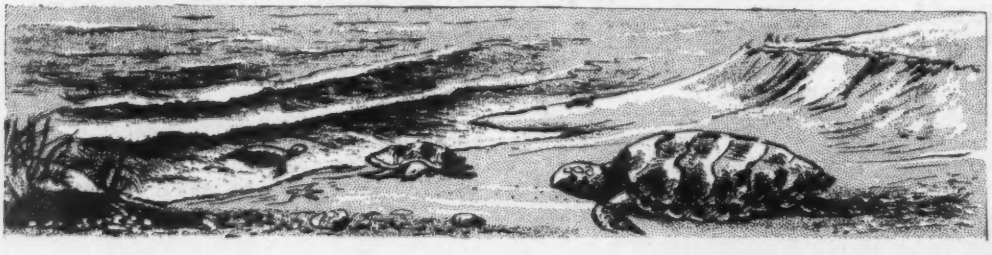
(b) Registration Fee (Matricula de pesca) valid for 1 year:
For mother-of-pearl and shellfish:
5-ton boats ..... U.S. $1.00
Over 5 tons 2.00
For turtles, sponges and others:
5-ton boats ..... U.S. $2.00
Over 5 tons 4.00

Pursuant to existing laws, only authorized persons will be allowed to fish for turtles and other fish in Nicaraguan waters. The fact that one fishes without being duly authorized not only makes one liable to the fine established by the present laws, but is also punishable by the existing police laws.

The authorization referred to above consists of a license fee given to the interested party by the Custom House. The following information must be stated therein:

> Where fishing is to take place; number and capacity of crafts which are to be used to this end; the number of fishermen employed in this enterprise, and the intended permanency of the craft in this undertaking.

These details must be inscribed in the licenses which will be issued for the period of six months only, after which they must be renewed.



The Government will designate the number of special guards which it may deem necessary for the inspection and constant watch of the fishing grounds. If, as a result of this vigilance, it should be ascertained that harmful and prohibited means are being used for fishing, or that maritime life is prematurely withdrawn from the sea, such as turtles or crustaceans which have not developed sufficiently for common usage, the interested party will not only lose his right to fish, but he will incur a fine of not less than 20 cordobas (U. S. $4.00) and not over $100 as well as still another fine to be imposed upon him by the Office of the Under Secretary of the Treasury or the Collector General of Customs in the locality who will be guided by the written report of the inspector bearing on the circumstances of the case.

Any person found fishing without the proper license, or who engages a number of fishermen greater than that stated on the license, or who makes use of a craft not properly registered will receive a double fine.

In the case where neither the fishermen nor the boats are covered by the pertinent authorization, fishing will be considered clandestine, and the crews as well as the boats will be seized, and the produce confiscated. This will be divided and shared among the Government officials, the denouncers, and the authorities responsible for the apprehension of the crafts, in accordance with Article 830 of the Customs' laws.

Nicaraguan fishing craft whose produce is for domestic consumption only procure a special permit from the Customs in order to fish, but on condition that the craft return to the same port with their catch.

Foreign fishing craft whose produce is for domestic consumption will pay the respective taxes (license and registration fees).

Norway

FISHERY NOTES: A delegation from the Department of Fisheries has signed a contract with the British Food Ministry for delivery of 40,000 tons of large herring and spring herring, according to the Royal Norwegian Information Service.

Of the 50,000 tons of klipfisk (dry salted cod) which Norway will export between May 1947 and May 1948, Portugal will get one-half and pay for it in dollars.

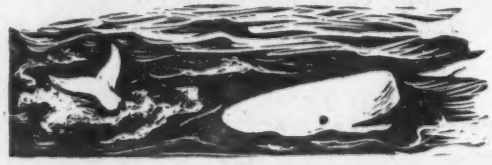
The Department of Supply and Reconstruction has suggested a change in the export law of December 13, 1946, to forbid all deliveries to foreign countries of products taken by Norwegian fishing or whaling vessels. The amendment would prevent the delivery of whale oil direct from factory ships to foreign countries without the approval of Norwegian authorities.

The King in Council has named a committee on modernizing the catching and processing of fish. The committee's mandate is to examine the Norwegian fisheries, as they are prosecuted today, and to decide whether through legislation or other official procedures there ought to be changes. If carrying out the committee's proposal requires changes in processing, it is expected the committee will make the necessary proposals. The committee's instructions do not cover herring fishing or processing.

Thirty-five thousand tons of whale oil from the coming season's catch has already been sold to England and Sweden. It is believed that forward sales will ultimately total 150,000 tons.

The Ministry of Fisheries and the Norwegian Rawfish Association have signed a contract for the sale of the freezer ship Thorland. The Association will take over the vessel and use it as a floating cold-storage warehouse. The machinery for freezing fish, rendering livers, and making fish meal and oil will be placed in important ports in Finnmark. The purchase price is 2,000,000 kroner (about $400,000) or about the same amount as the Government paid for the Thorland.

JAPANESE WHALING IN THE BONIN ISLAND AREA



The whale fishery around the Bonin Islands since its development on a commercial basis in 1923 has augmented the food and oil supply of Japan.

Two Japanese companies exploited the whale resources of the Bonin Islands. They operated small whaling fleets, and each established a land station where catches were processed. The products were brought back to Japan for disposition.

Operations in Bonin waters were minimized with the beginning of World War II in the Pacific, and had ceased by the time of the Japanese surrender in 1945.

On November 30, 1945, the Supreme Commander for the Allied Powers authorized the Japanese to resume Bonin whaling operations from December 1, 1945 to March 31, 1946. A month's extension was granted in March 1946 to enable the Japanese to take full advantage of the whaling season. Operations commenced in February and were concluded in mid-April 1946. During this season, 113 whales were caught despite limited equipment and a relatively short operation. The catch yielded whale products valued at approximately 7,000,000 yen.

--Fishery Leaflet 248

FEDERAL LEGISLATION, DECISIONS, ORDERS, ETC.

Department of the Treasury

MEASUREMENT OF VESSELS: The following amendment has been made in the regulations relating to the measurement of vessels:

> "Deductions from gross tonnage. ... No space shall be deducted unless it has been included previously in the vessels' gross tonnage; is reasonable in extent for the purpose to which it is appropriated; and is certified by marking as prescribed in paragraph (c) of this section showing that it is used exclusively for such purpose."

For further information on this subject, contact your local Customs House.

Presidential Proclamation

TARIFFS AND TRADE: President Truman on December 16, 1947, signed a proclamation designating January 1, 1948, as the effective date for United States participation in the "General Agreement on Tariffs and Trade" concluded at Geneva, October 30, 1947.

ECONOMICS OF U. S. FISHERY INDUSTRIES

FISHERMEN TURN OVER THEIR CAPITAL INVESTMENT* . . . . . 1.0 TIMES ANNUALLY

WHOLESALERS AND MANUFACTURERS TURN OVER THEIR INVESTMENT* ABOUT 4.4 " "

RETAILERS TURN OVER THEIR INVESTMENT* . . . . . 15 " "

ESTIMATE OF CAPITAL INVESTMENT IN COMMERCIAL FISHERIES*

	ACCRUED VALUE
PRODUCERS:	
VESSELS AND BOATS	$225,000,000
NETS AND OTHER GEAR	38,000,000
FREEZING AND PROCESSING PLANTS	145,000,000
WHOLESALE FISH HOUSES*	130,000,000
RETAIL FISH DEALERS, CHAIN STORES, ETC.*	59,000,000
TOTAL	597,000,000

*CAPITAL INVESTMENT DEVOTED TO FISH TRADE.

NOTE: IT IS ESTIMATED THAT THE 1947 REPLACEMENT VALUE OF FISHING CRAFT, GEAR, AND WHOLESALE AND PROCESSING PLANTS WOULD BE $742,000,000.

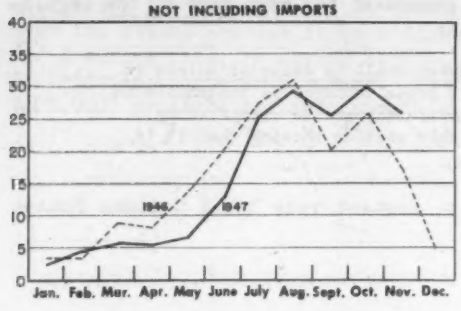
--U.S. FISH AND WILDLIFE SERVICE

LANDINGS AND RECEIPTS

In Millions of Pounds

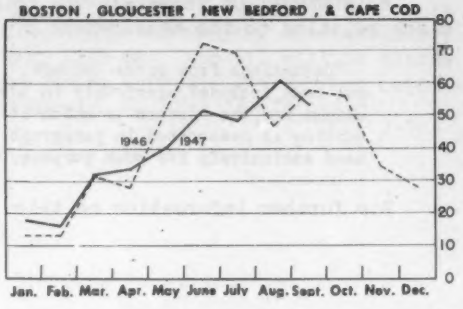
MAINE - LANDINGS

NOT INCLUDING IMPORTS



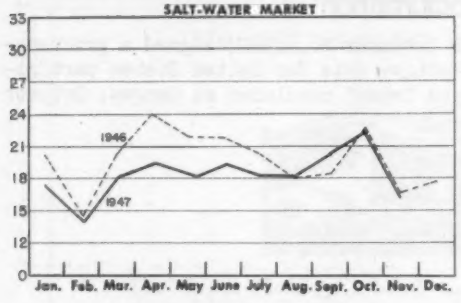
MASSACHUSETTS - LANDINGS

BOSTON , GLOUCESTER , NEW BEDFORD , & CAPE COD



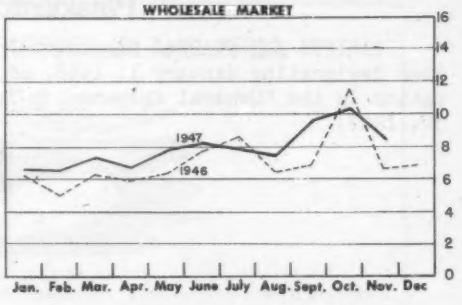
NEW YORK CITY-RECEIPTS OF FRESH & FROZEN FISH

SALT-WATER MARKET



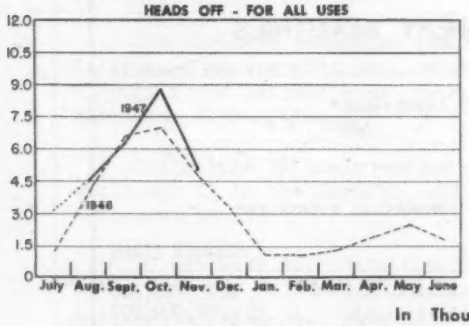
CHICAGO - RECEIPTS OF FRESH & FROZEN FISH

WHOLESALE MARKET



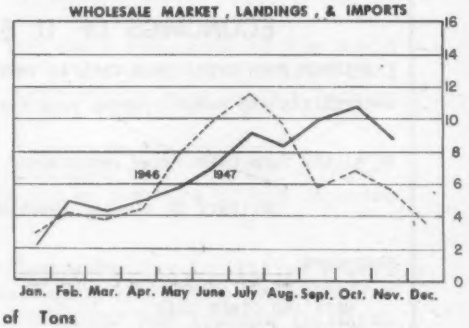
GULF - SHRIMP LANDINGS

HEADS OFF - FOR ALL USES



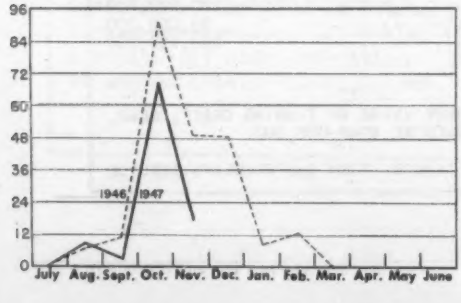
SEATTLE - RECEIPTS OF FRESH & FROZEN FISH

WHOLESALE MARKET , LANDINGS , & IMPORTS

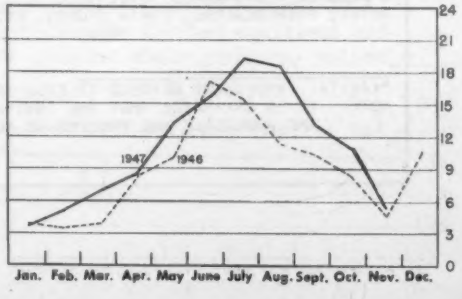


In Thousands of Tons

CALIFORNIA - PILCHARD LANDINGS



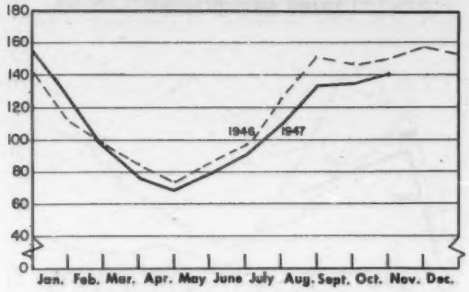
CALIFORNIA - TUNA LANDINGS



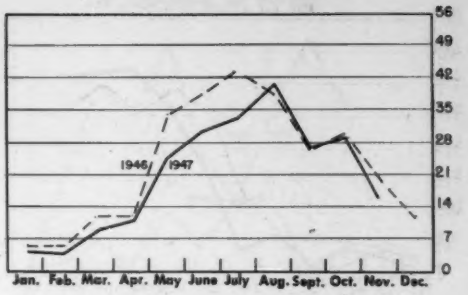
COLD STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS

In Millions of Pounds

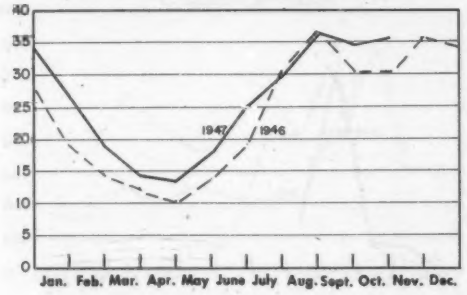
U.S. & ALASKA - HOLDINGS OF FROZEN FISH



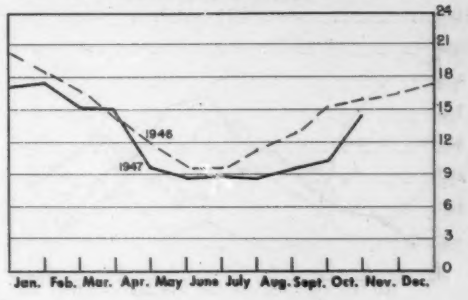
U.S. & ALASKA - FREEZINGS



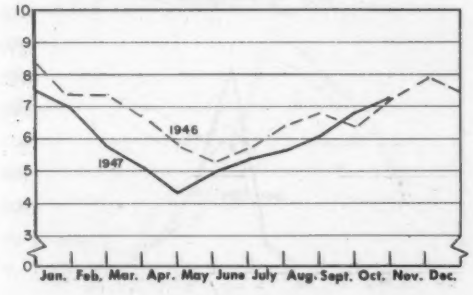
NEW ENGLAND - HOLDINGS OF FROZEN FISH



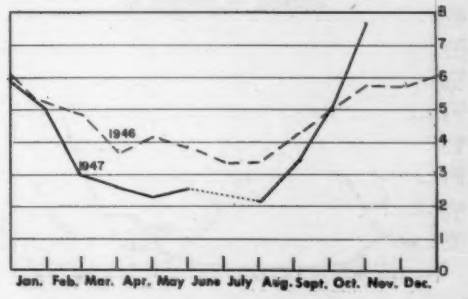
NEW YORK CITY - HOLDINGS OF FROZEN FISH



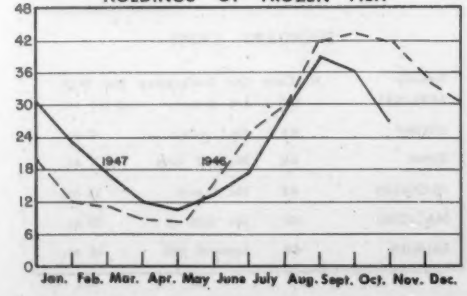
CHICAGO - HOLDINGS OF FROZEN FISH



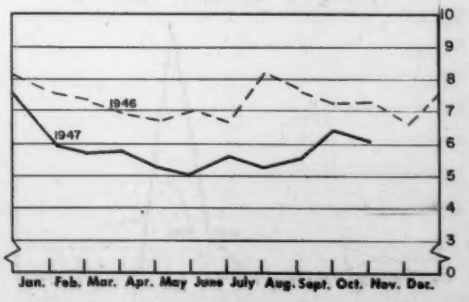
GULF - HOLDINGS OF FROZEN FISH



WASHINGTON, OREGON, AND ALASKA - HOLDINGS OF FROZEN FISH



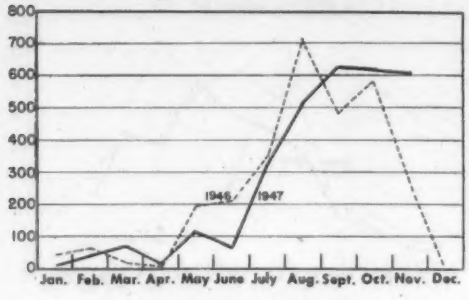
CALIFORNIA - HOLDINGS OF FROZEN FISH



CANNED FISHERY PRODUCTS

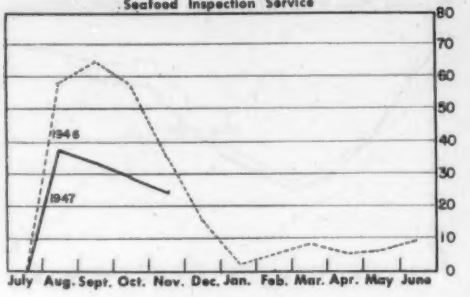
In Thousands of Standard Cases

MAINE - SARDINES, ESTIMATED PACK

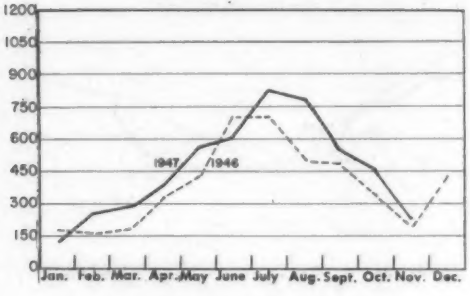


UNITED STATES - SHRIMP

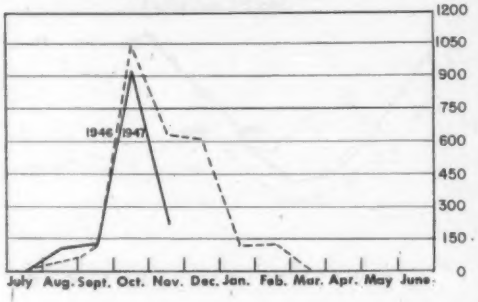
Plants under Food and Drug Administration Seafood Inspection Service



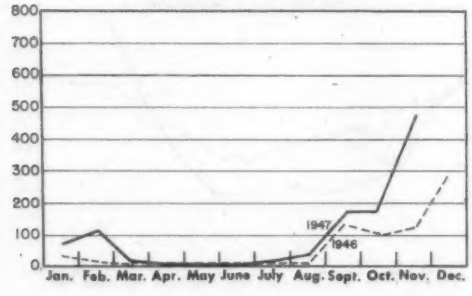
CALIFORNIA - TUNA



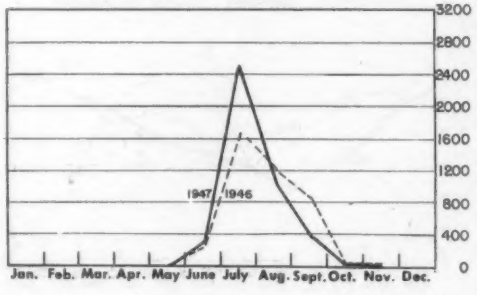
CALIFORNIA - PILCHARDS



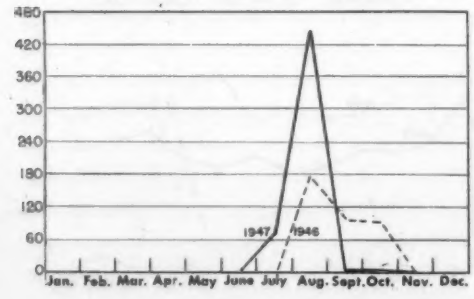
CALIFORNIA - MACKEREL



ALASKA - SALMON



WASHINGTON - PUGET SOUND SALMON

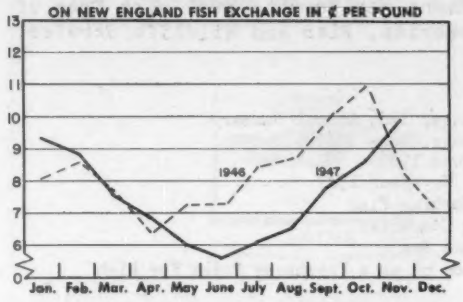


STANDARD CASES

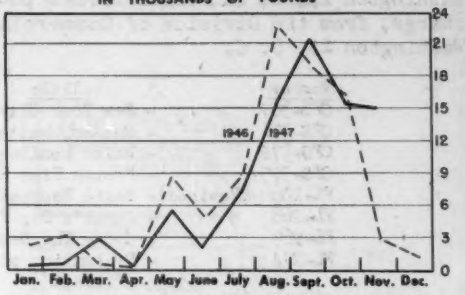
Variety	No. Cans	Can Designation	Net. Wgt.
SARDINES	100	1/4 drawn	3 1/4 oz.
SHRIMP	48	No.1 picnic	7 oz.
TUNA	48	No. 1/2 tuna	7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
MACKEREL	48	No. 300	15 oz.
SALMON	48	1-pound tall	16 oz.

PRICES . IMPORTS and BY-PRODUCTS

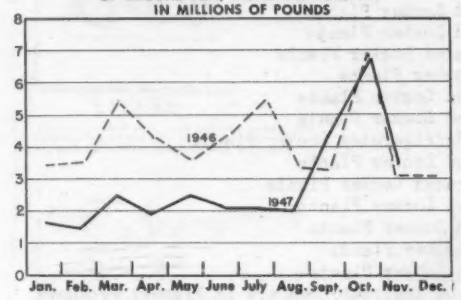
BOSTON - WEIGHTED AVERAGE PRICE
ON NEW ENGLAND FISH EXCHANGE IN ¢ PER POUND



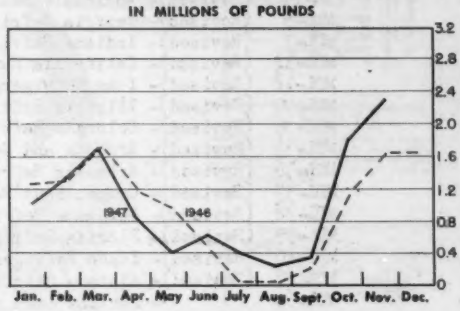
MAINE - IMPORTS OF SEA HERRING
IN THOUSANDS OF POUNDS



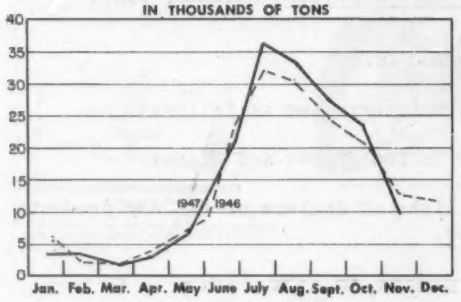
U.S. - IMPORTS OF FRESH & FROZEN FILLETS
OF GROUND FISH, INCLUDING ROSEFISH:-
IN MILLIONS OF POUNDS



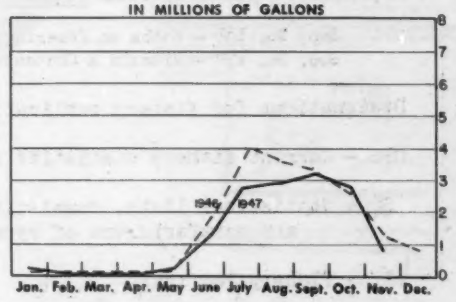
U.S. - IMPORTS OF SHRIMP FROM MEXICO
IN MILLIONS OF POUNDS



U.S. & ALASKA - PRODUCTION OF FISH MEAL
IN THOUSANDS OF TONS



U.S. & ALASKA - PRODUCTION OF FISH OIL
IN MILLIONS OF GALLONS



RECENT FISHERY PUBLICATIONS

Listed below are informational publications which recently have been processed by the Division of Commercial Fisheries. FL publications are available free of charge, from the Fish and Wildlife Service, U. S. Department of the Interior, Washington 25, D. C. Other listed publications may be obtained, also free of charge, from the Division of Commercial Fisheries, Fish and Wildlife Service, Washington 25, D. C.

Number		Title
CFS-367		- New York City Landings, 1946 Annual Summary
CFS-371		- Massachusetts Landings, June 1947
CFS-372		- Maine Landings, August 1947
CFS-375		- Frozen Fish Report, November 1947
FL-106	(Revised)	- Basic Recipes for Cooking Fish
FL-268		- Japan's Big Fishing Companies
FL-269		- Cod - The Beef of the Sea
FL-274		- Evaluation of Surface pH as a Freshness Index for Fish Fillets
SL-14	(Revised)	- Wholesale Dealers in Fishery Products, South Carolina, 1947
SL-15	(Revised)	- Wholesale Dealers in Fishery Products, Georgia, 1947
MDL-5	(Revised)	- Georgia Refrigerated Locker Plants
MDL-7	(Revised)	- Indiana Refrigerated Locker Plants
MDL-14	(Revised)	- California Refrigerated Locker Plants
MDL-18	(Revised)	- Iowa Refrigerated Locker Plants
MDL-20	(Revised)	- Illinois Refrigerated Locker Plants
MDL-26	(Revised)	- Colorado Refrigerated Locker Plants
MDL-33	(Revised)	- Arizona and Nevada Refrigerated Locker Plants
MDL-36	(Revised)	- Arkansas Refrigerated Locker Plants
MDL-37	(Revised)	- Connecticut Refrigerated Locker Plants
MDL-38	(Revised)	- Delaware Refrigerated Locker Plants
MDL-39	(Revised)	- Florida Refrigerated Locker Plants
MDL-40	(Revised)	- Idaho Refrigerated Locker Plants
MDL-48	(Revised)	- Alabama Refrigerated Locker Plants
MDL-60		- Partial List of Inland Wholesale Dealers in Fishery Products

Reprints (Separates) from Commercial Fisheries Review, November 1947.

Sep. No. 189 - Notes on Freezing Shrimp
Sep. No. 190 - Vitamin A Content of Fur Seal Oils

Designations for fishery publications are interpreted as follows:

CFS - Current fishery statistics of the United States and Alaska.

SL - Statistical lists, consisting of lists of dealers of fishery products and manufacturers of byproducts.

FL - Fishery leaflets.

MDL - Market development lists of frozen food locker plants and locker associations.

Illustrator--Gustaf T. Sundstrom

Compositors -- Jean Zalevsky and Norma D. Loeffel
Processing -- Miscellaneous Service Division

FISHERY BY-PRODUCTS

SKINS

LEATHER, MINUTION, GLUE, GELATIN, ENGRAVERS GLUE, FERTILIZER.

BODY OILS

ANIMAL NUTRITION, PAINTS, VARNISHES, PRINTING INK, LINOLEUM, SOAP, STEARINE, LEATHER, MANUFACTURE, WATER-PROOFING MATERIALS, CUTTING, OILS, DOUBLE BOILED, LUBRICANTS, CANDLES, COSMETICS, ARTIFICIAL LEATHER, INSECTICIDES, FLOOR AND FURNITURE POLISHES, ARTIFICIAL RESINS (PLASTICS) COMPOUNDING, RUBBER, SYNTHETIC RUBBER, VETERINARY MEDICINES, CHOLESTEROL, SQUALENE, LECITHIN.

LIVERS

VITAMIN A AND D OILS, HIGH QUALITY ANIMAL FOOD CHOLESTEROL IRRADIATED FOR VITAMIN D, AS FOOD FOR HUMAN CONSUMPTION, BILE ACIDS.

SCALES

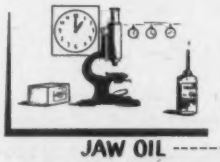
MANUFACTURE OF PEARL ESSENCE, JEWELRY AND NOVELTIES, IN LACQUERS AND PLASTICS, IN A PLAY IMPRESSING COMPOUND IN FOAM TYPE FIRE EXTINGUISHERS, ANIMAL CHARCOAL WHEN CARBONIZED

EYES

NOVELTY PRODUCTS AND COSTUME JEWELRY VITAMIN B_2 B_{12}.

FLESH

HUMAN FOOD, FISH MEAL FOR ANIMAL AND POULTRY FEEDING, AMINO ACIDS, TRYPTOPHANE, ARGININE, CYSTINE, HISTAMINE, LEUCINE, CYSTINE, CYSTEINE, HISTAMINE DICHLORIDE, HISTIDINE DIHYDROCHLORIDE, HISTAMINE FREE BILE, FISH SOLUBLES, VITAMIN B COMPLEX, PLASTICS, SYNTHETIC ESTROGENS, FOOD PRODUCTS CLOSELY RESEMBLING CHEESE.



JAW OIL

LUBRICANT FOR WATCHES, CLOCKS, MICROSCOPES, TELESCOPES AND ALL TYPES OF DELICATE INSTRUMENTS.

SOUNDS

ISINGLASS, CLARIFIER FOR BEVERAGE, VINEGAR PRODUCTS, BEER, WINE, ETC., IN MANUFACTURING OF ADHESIVES.

ROE

AS FOOD FOR HUMAN CONSUMPTION, FISH BAIT, AS FOOD FOR HATCHERY AND AQUARIUM FISH.

MILT

IN MANUFACTURE OF PROTAMINE INSULIN, AS FOOD FOR HUMAN CONSUMPTION.

U. S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
WASHINGTON, D. C.

UNITED STATES
PARTMENT OF THE INTERIOR
FISH AND WILD LIFE SERVICE
WASHINGTON 25, D. C.

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